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AND

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The present number concludes the fourth half-yearly volume, of the New Series of the American Railroad Journal, and likewise brings us to the termination of the *eighth* year of its existence. Having abstained from any thing of the kind during the progress of the last volume—we will venture at its close to take a review of our labors, and return thanks to those to whom it is due.

It will be found on examination, that the quantity of original matter is nearly *one half of the volume*, and much of this too, is from the pens of gentlemen well known in their profession, and fully able to contribute to the general stock of professional intelligence. We can safely say that no effort has been made to procure these contributions, other than by a simple request, and in many cases we have been largely indebted to voluntary contributors.

To the writer of the vigorous and well reasoned articles, signed "*Fulton*," we are greatly under obligation for a series of papers, which have been extensively copied throughout the State, and which will be found to contain a more lucid statement of the resources, condition, and future prospects of the Erie Canal, in regard to its enlargemant—than we fear can be found in the documents of the canal board itself. We hope for a continuation of these papers, and among other topics we desire to have from "Fulton," a criticism upon the famous Report on the future revenue of the Erie Canal, laid before the Legislature during the last session. The gentlemanly tone of "Fulton's" language has rendered these papers generally acceptable while the sound reasoning and well drawn conclusions have not failed to carry conviction to the minds of those who have given them an attentive perusal.

We are also indebted to our esteemed friend William R. Casey, for a number of excellent communications. That on the Western Railroad, is peculiarly interesting as it developes the resources and prospects of a work

which, although not within our own territory, will have an important bearing upon several of our main lines of communication with the west. For this and his other papers, Mr. C. deserves our best thanks, and we hope for many more in our next volume.

From Mr. Charles Ellet, Jr., we have received several valuable reports, and a description of the Schuylkill Wire Suspension Bridge, the engraving of which as appended to No. 5, being a present from Mr. Ellet of no small value. When engineers not only furnish us with useful matter, but also provide the illustrations already engraved, we feel ourselves under heavy obligations, as the expense of this kind of work is entirely beyond our means. We hope, however, that Mr. E. will not consider that he is freed from further obligation to assist us.

We can hardly find a number of the Journal, either in the present or former volumes, in which we do not find ourselves under obligations to our indefatigable friend "J. E. B." We are particularly indebted to him, for several admirable summary, and comparative views of the various important lines of railroad in the United States and in England. The short and pithy notices of this gentleman, have done much to the diffusion of popular intelligence in regard to Railroads, and his articles always are accepted with a hearty welcome. We may remark that the aid we have received from this gentleman, is not to be measured by the number of articles which bear his signature, for his ever ready eye detects whatever may prove serviceable, and been the means of providing us with many useful items.

Mr. Roebling, and Mr. Cushman, have likewise furnished us from time to time with articles of interest, and we are happy to be able to rank them among our regular contributers. The communications of Mr. Roebling have one unusual character, which has always rendered them doubly welcome—they are written in the plainest possible hand, and the extraordinary neatness of his diagrams and formula, have saved us much trouble, and himself much mortification in correcting errors. Some fatality however, appearsto have attached to the communications of Mr. Cushman, and to have rendered numerous errata necessary. We beg leave to apologise to Mr. C., promising to use every effort in our power to prevent a recurrence of such mistakes. The proof of the article in question was read several times, and by different persons, and yet a few errors crept through unobserved.

The valuable notice by Mr. John M. Fessenden, of his new rail and chair, accompanied by cuts, has been treated with apparent neglect, the cause of which was the illness of our engraver, and the impossibility of obtaining the cuts for an earlier number. We trust that Mr. F. will not be discouraged by this circumstance, from contributing his ever welcome notices.

Mr. Shotwell, has likewise been so kind as to furnish us with a quantity of original matter.

Mr. Williams and several other gentlemen, are also entitled to our thanks, for various notices; a repetition of which is respectfully requested.

Mr. Aycrigg, who has furnished us with matter of interest, we hope will continue his valuable assistance. We understand that he has made the investigation of the Steam Engine a matter of much study, and we desire to hear from him upon this point.

In respect to an article entitled "English and American Railroads," we find that we were right in our conjecture, and that they were written by Mr. Klein, the companion of the Chevalier de Gerstner. We are in hopes that an arrangement will be made with this gentleman, to become a regular contributor to our Journal.

We have made it a point particularly to acknowledge our indebtedness to our friends, as it has been an unusual circumstance to receive so many original communications in so short a space of time; and we hope that this promising commencement will not disappoint us and our readers. Our chief aim being to render our Journal as useful as possible, we always wish to see in its pages a large portion of original matter from members of the profession—conceiving that by this means, we are not only contributing to the diffusion of really valuable matter, but also bring about a better acquaintance between Engineers themselves.

In conducting a public Journal of any kind, it appears impossible to avoid controversy, and in fact, we are not opposed to a fair and critical examination of various topics; the constant fear however, is, that these things may be carried to excess. We wish it to be distinctly understood, that we do not admit articles because we agree with the writers in any respect, and we therefore disclaim any idea of the adoption on our part, of the opinions of any or all of our contributors, unless so expressed. It is to be desired, that when gentlemen feel themselves called upon to dispute the opinions of others, it may be done in the manner least calculated to wound the feelings, and best adapted to bring about a fair understanding. We have had in the present volume, but three cases of controversy, two of which originated in matter previously published, and therefore may be considered as a discussion growing out of the subject. The third case, however, was originally commenced as a criticism, in our pages. We hope that this matter settled, that gentlemen who have taken part in it, may be induced to furnish us with something of another character.

We are well convinced that the value of the Journal will be greatly increased by the mutual exchange of opinion through its pages, and we repeat it, that the best results to the profession will grow out of the increasing contribution of Engineers, each one chosing that topic for the consideration of which, he has had the best opportunity.

We consider that one feature in the past volume is a good one—having curtailed our subscription list, by cutting off nearly all our non-paying subscribers, we have endeavored to avoid all dunning notices. We are fully persuaded that this curtailment has enabled us to do more justice to our real friends, and spared them the mortification of reading what was intended for others.

Several arrangements have been made, which will, we hope add to the value of the next volume of the Journal; and we shall spare no pains to make it worthy of the kindness which has hitherto been extended toward us.

For the American Railroad Journal, and Mechanics' Magazine.

EARLE'S METHOD OF PRESERVING TIMBER.

MESSRS. EDITORS.—The above method of curing timber, in spite of the incredulity, and prejudice, and opposing interests of rival processes, begins, we understand, to be very highly accredited. The processes of Kyan and of Bill, (the latter improved by Mr. Renwick) have long been known, and their sufficiency for their purpose well established; and by the addition now, of this other process of Dr. Earle, we may congratulate the public on having an enlarged choice of the mode, in which every one may, according to his preference, avail himself of an important benefit. But it is of the latter alone, we at present, intend to speak.

The favorable attestations of the learned committee of the Franklin Institute, and of many of the most scientific men of the U. S., as published some time since by Dr. Earle, have not been without their effect on public opinion; and we learn, with increased satisfaction, that the value of his process, has recently been recognized by the honorable Secretary of War, and gentlemen presiding in the several bureaux of his Department. That, as a first step towards the adoption of it into public service, the preparation of a large quantity of timber is now in progress, under the superintendence of the patentee, at the Watervleit arsenal in this State, and that there is just reason to believe that similar patronage will presently be extended to it by our Naval Department also. We find too, in some of the Philadelphia newspapers, that the State Penitentiary, near to that city, requiring extensive renewal of the wooden parts of the cells and central building, is to be repaired, under a decision of the Inspectors, with timber cured by this method. These are very creditable proofs of the estimation in which this process is now held by many whose intelligence fits, and whose interest and duty prompt, them to examine and judge capably of it. Nor is it to be regarded as a less honorable testimony of its merit, that it is attracting foreign attention; and especially, that it is likely to be soon employed in the naval architecture of Russia.

But the signal advantages of this process are, that it employs materials of the greatest abundance and cheapness, and of a perfectly inoffensive character. By an improvement too, very recently adopted by Dr. Earle, in his mode of conducting the process, the cost of the apparatus is greatly reduced, and its construction so improved in simplicity, and the freeness of its parts, as to be easily transportable to, and employed in, any situation in which it can be required. It is capable of being accommodated to operations of any magnitude; from the smallest to the greatest; and the terms on which the right of using this process are granted by the patentee are, as our inquiries inform us, of the most liberal kind.

With such a mode of giving durability to the blocks, how desirable does it become that our city should enjoy the comforts and advantages of wooden pavements;—especially that our Halls of Justice and our Temples of worship, should be freed from the disturbing noise of passing vehicles, at those hours when peace and quietness are most desirable. We confess it has been one of our chief objects in attempting this favorable, but, we believe, just view of Dr. Earle's process, to bring it precisely before our city authorities, and induce them to move in a matter at once so practicable, so desirable, and withal so reasonable.

By giving currency to the above through one of the pages of your valuable Journal, you may, perhaps, do acceptable service to many; and will oblige one of your subscribers, and

A FRIEND TO IMPROVEMENT.

New York, June 5th, 1840.

To the Editors of the American Railroad Journal, and Mechanics' Magazine.

GENTLEMEN.—I find by the editorial remarks in your last number, that my explanation of the comments upon Professor Renwick's account of American Steam vessels, and the accompanying table, have not proved satisfactory, as my last communication is preceeded and followed by remarks of your own, the authorship of which I do not question, in which some of your former objections are repeated and amplified. The table in my first letter appears now to be the principal part objected to, and this because the power of the engines is not properly estimated. The dimensions of the cylinders are given, however, and every engineer and editor is, or ought to be, able to elucidate the power of the engines, if they are properly proportioned in other parts, and they are permitted to assume any pressure, of steam they choose, as they certainly would be in this case. The table was compiled with a view to show the *actual consumption* of fuel by the different engines *named while working at the usual rates;* but I shall be pleased to see it amended by yourselves or "an Engineer" and the power of all the engines calculated by the same rule, whatever that may be.

But for better understanding the subject let us examine it a little more in detail. The Rochester had one cylinder of 43 inches diameter, and 10 feet stroke; the Liverpool two cylinders of 75 inches diamater each, and stroke of 7 feet each. The Rochester was worked 26 strokes per minute, with steam at a pressure of from 20 to 40 lbs, per square inch, and the cylinder filled about $\frac{1}{4}$ of its length at each half stroke. To do this requires about 655 cubic feet of steam per minute.

The Liverpool was worked 16 strokes per minute, with steam at a pressure of $3\frac{1}{2}$ to 4 lbs per square inch, and each cylinder filled $\frac{3}{4}$ of its length at each half stroke, which required about 10300 cubic feet of steam per minute. To produce this large bulk of steam at that low pressure, requires more than twice the amount of caloric that is required to produce 655 feet at even

40 lbs per inch; and yet the amount of fuel consumed, per hour, on board the Rochester, was greater than on board the Liverpool, in the proportion of 5 to 4. But I did not question the correctness of the plans, or proportions, or workmanship of the American engines, nor say any thing which can be construed into a doubt that they *may be* worked economically. I simply set down the results of the *practice which is followed*—nor have I ever expressed a doubt "that of two boats precisely equal in all respects, the one obtaining the highest possible speed, will burn more fuel in travelling a given distance than one travelling at a certain rate beneath that of the first." Or the case may be more clearly stated thus:—the higher the pressure of steam, the greater the expenditure of fuel in procuring a given amount of power. This is an incontrovertible fact, proved by experience; and I am happy to find distinctly admitted by yourselves—but by what means this *fact* is to be reconciled with the *opinion* afterwards expressed, that "the greatest economy" is "to be derived from the use of steam of high pressure, the limit of course to be dependant upon the strength of the boiler," I do not exactly see.

Whether I understand the phrase "the mere pressure of steam," correctly I shall leave your readers to decide. But a "mere verbal criticism" will not prove either the correctness or incorrectness of the opinions expressed by Doctor Renwick, nor the most minute grammatical accuracy in the language used in discussing them, render a practice in conformity with his theory economical, or divest it of danger.

I am your obedient servant,

JOHN D. WARD.

Novelty Works, 4th June, 1840.

For the American Railroad Journal and Mechanics' Magazine.

SWISS CURE FOR BLISTERED FEET.

Having frequently experienced the inconvenience of blisters, and tried several remedies that nearly alleviated the pain; I was much pleased with the immediate and permanent relief experienced from the prescription of my guide when travelling among the Swiss mountains in the fall of 1837.

The preparation being very simple, and the materials procurable, at any farm house, I value the information very highly, and therefore think that I can hardly offer a more acceptable little present to my professional brethren.

Take the albumen or whites of two eggs, mix them with an equal quantity of whiskey or brandy. Pour the half into each shoe. Wet the inside thoroughly, and then put the feet into the liquid, so that the thick woolen stockings may be saturated, over the entire surface of the feet. Leave the stockings on till the cure is complete.

The liquor used in my own case was kirchenwasser, but any strong alcoholic liquor, will doubtless answer the same purpose.

The immediate effect of the application is to reduce the pain by the stimulus of the alcohol joined with the cold produced by the evaporation from the surface of the leather, but the principal cause of the cure is mechan-

ical; for I found, on removing the stockings, that they were closely glued to the feet, and thus, in place of rubbing off the blisters after they had been raised, the stockings alone received the friction of the shoe, and furnished a perfect protection to the natural skin.

Those who have never tried a similar expedient, will be astonished, as I was, at the efficacy of the cure; for after my feet were covered with blisters, I found no need to reduce our usual rate of 8 to 10 French leagues per day, but accomplished within three days, between 60 and 70 miles, on the route from the "Lake of the Four Cantons," to the Hospice, at the summit of the St. Gothard road, thence to the "Spital," thence among stones, rocks, and snow, over one of the highest passes among the Alps, to the source of the Rhone, and traversed the glacier of the Rhone; during this route ascended and descended between three and four miles in perpendicular height, frequently running down the steep side of the mountain in order to relieve the constant strain on the muscles of the thighs, and thus throwing a greater labor on the feet, and still, at the end of the time found the blisters entirely healed.

I found no need of making a second application of the mixture, during this excursion, of more than three weeks constant travelling of the severest description, since my feet had become seasoned, while, if I had stopped, I should not only have lost the time, which could ill have been spared when winter was fast approaching; but the difficulty would probably have been renewed when I recommenced, as I should have lost the benefit of the previous exercise.

When blisters are anticipated I should apply the mixture and glue the stockings to the feet before the difficuly occurs.

The cure would, at times, evidently be of great utility, in the army.

In a long row, on a sudden emergency, I presume that the hands might be protected in the same manner.

The same principle is applied to the harness of a horse; since the most effectual sweat collar, is a piece of cloth made to fit closely to the neck, tied together where it meets on the crest, and then fastened to the saddle and girth, so as to fit as tightly as the skin. This receiving all the friction of the drawing collar, leaves the skin meerly to bear the pressure.

B. Aycrigg.

We publish with pleasure the following interesting communication, from T. P. Holcomb, Esq., and trust that our neighbors in Connecticut, will examine the suggestions of Mr. H. We should suppose the dense population along the line of the Farmington canal with the agricultural and manufactured productions of that region sufficient, to pay legal interest on a railway communication, that should cost $175,000.

In the commencement of our Journal, we took ground, of the superiority of railways over canals. On the 15th Nov. last, No. 10, vol. III, New Series, we admitted a communication "Railways destined to supercede Ca-

nals" from a gentleman who has contributed largely to dispel the errors and prejudices which have been entertained, even by the profession, against railways. It appears that this communication, with those of subsequent date, to wit, in No. 7, vol. IV. "Railroads and Canals," has produced us the valuable communication from Mr. Holcomb.

It is from the frank discussion of this subject, that light, and a favorable impression can be made on the mind. Had the views of the gentleman alluded to, met the candid consideration of our Canal Board, we should have saved millions on millions, now squandering on the enlargement of the Erie Canal. Railroads would have been built, on the lines of the Chicago, the Black River and Genessee Valley canals, at ¼ to ⅓ the cost of the works, that can only be used ⅔ of the year in the high latitudes of this State.

For the American Railroad Journal and Mechanics' Magazine.

ENGINEER'S CAMP, CENTRAL RAILROAD OF GEORGIA, April 30th, 1840.

TO THE STOCKHOLDERS OF THE FARMINGTON, AND HAMPSHIRE, AND HAMPDEN CANALS.

GENTLEMEN—I saw in the Railroad Journal, the other day, an observation to this effect, that the Hartford and New Haven railroad having been finished, the Farmington canal might be considered, as having made its last dying struggle: and although my predilections have ever been much in favor of that work, I am forced to the same conclusion.

I look back upon the Farmington canal, as to a first love, for it was there that my first practical lessons in engineering were taken; it was there that I commenced laying in the stores of experience, which have since been of much service to me. There is nothing surprising then, though engaged in a section of the country, distant from that, if I still send a thought after that enterprise.

The New Haven and Northampton canal is in length, I think, about eighty miles; besides feeders, navigable and otherwise; making the total length, nearly or quite, one hundred miles.

This was no ordinary undertaking; for every one must be aware, that to push a canal through any part of New England, for that distance, many serious obstacles would have to be encountered and overcome: yet, by the energy of its projector, the late Honorable James Hillhouse, and others, it was urged forward to completion. But the buoyant hopes and sanguine expectations, that had thus far attended the work, were doomed to disappointment; notwithstanding the great Clinton had said, that it would be to New Haven, what the Erie canal is to Albany; and to New England generally, what that canal is to the State of New York, it being at one time contemplated to extend the Farmington canal to the Canada line.

It was found, though too late, that in the Connecticut river, it had a formidable rival: for although the cost of transportation by the river was

somewhat greater—the certainty of arrival was also greater; and certainty is one of the features of commerce, for which people will pay liberally.

The uncertainty by the canal, has been owing to two causes—the extremely sandy nature of the country through which a part of the canal passes, and the consequent liability to breaks—and on some of the levels a scarcity of water; evils which even the great skill of the resident Engineer, with the scanty means at his control, has not been able to remove. How nobly the citizens of New Haven have come forward, when accidents have occurred, I need not mention. Such enterprise as theirs, if directed in the right channel, must be crowned with success; and the object of this communication, is to incline it in that direction; for if I mistake not, in addressing the stockholders of the New Haven and Northampton canal, I address many of those citizens. My object is to point out how the canal can be turned from a heavy tax to a *certain means of profit.* And how is that to be done, do you ask? I reply, that it is to be done, by draining it of its useless waters, and laying down a *railroad* upon its bottom; and this I shall endeavor to prove to the satisfaction of all. It is true, writing at this distance, and without any conveniences for reference, at hand, I labor under many difficulties, but I think notwithstanding, that I shall be able to make my position good.

Of the capabilities, and general utility of railroads over canals, I trust little need be said. Instances are too frequent of their complete triumph, when the latter have been as complete failures, to require much comment. I will instance the Camden and Amboy railroad, not as an isolated case, for there are many of them, for wherever railroads are found, laboring under no *restrictions*, and unconnected with *state management*, they are found to bear off the palm.

And what does the Camden and Amboy railroad exhibit? It exhibits an instance of a railroad, which cost two and a quarter millions of dollars, having paid for itself in seven years, notwithstanding one of the finest canals in the United States, runs parallel to it, in dimensions the same as the enlarged dimensions of the Erie canal, admitting the passage of steamboats and schooners: which canal has languished for want of patronage—having paid to the stockholders the fraction of one per cent. per annum. I allude to the Deleware and Raritan canal. Yes, here is an instance of a canal on a route where the business is immense, that is but just able to keep itself in repair; while a railroad upon the same route, has paid at the rate of eleven per cent. per annum, upon the investment.

I notice in the papers that the railroad is carrying flour from Philadelphia to New York, at twenty-five cents per barrel, notwithstanding the facilities offered by the canal, and also by the Delaware river, and thence coast-wise.

The Schuylkill canal might be instanced, the stock as I see, having fallen, on the mere anticipation of the completion of the Philadelphia and Reading railroad, from three hundred and sixty dollars ($360 00) per

share of $100 00, to one hundred and sixty dollars ($160 00). The Blackstone canal from Worcester to Providence, it is well known, is a complete failure; but, for the success of the railroad leading from the same point, (the Worcester and Boston) in somewhat different direction, it is true,—I would refer you to the report of the directors. This is the conclusion that I arrive at; that the failure of a canal connecting two points, is no evidence that a railroad would not succeed. Nor need it be thought surprising that one flourishes where the other languishes. In these days of "*going ahead*," speed and certainty take precedence of every thing else.

The next inquiry proper to be made, is in relation to the inducements held out for a railroad from New Haven to Northampton. I have no means of learning the amount of business likely to offer from those towns through which the railroad would pass, or from the valley of the Connecticut river above Northampton. The amount is certainly large, most of which at present finds an outlet by the Connecticut, and the New Haven and Hartford railroad; and in so doing, much of it of course, crosses the canal. Is it for a moment to be supposed, that if instead of the tardiness and uncertainty of a canal, the speed and certainty of a railroad were to be substituted, this would continue. The average distance between the canal and the river is about 10 miles; this is a narrow strip of country, but it abounds in agricultural and manufacturing wealth. As far up as Hartford, the Hartford and New Haven railroad would divide the business of this strip, but from that point the proposed railroad would sweep the very banks of the river, and be without a rival on the right or on the left. If the Hartford and New Haven railroad can successfully compete with the steamboat route to Hartford, and who doubts it? What may we expect of a railroad above that point where the navigation is obstructed by rapids, and where only the very smallest class of steamboats can be used? The proposed improvement would cross at Westfield the Massachusetts Western railroad, thus opening a route, and who will not say a desirable one, having as it would but a few hours of steamboat travel, (that is to say, from New York to New Haven) from New York to Springfield, Worcester, and Boston, and also to Albany. The many pleasant towns and villages which would attract the notice of the traveller for pleasure,—from among which I will mention Farmington, Westfield, and Northampton, are well known; or, wending his way on towards Albany, he might feast his eyes on the wild grapes of the Pontoosuc. I cannot perceive that there would be any clashing of interests whatever, between such a railroad and the Western railroad, crossing as they would, at right angles. On the contrary, they would furnish business for each other.

It now remains to show the practicability at a small expense, of making a railroad on the site of the canal. First then, drain it effectually, by running ditches along the sides just at the foot of the inner slopes. Let the outer slopes of these ditches be continuations of the inner slopes of the ca-

nal—let the ditches be, say four (4) feet wide at top, and one (1) deep. The slopes of the canal are 1 foot perpendicular, to 1½ horizontal; preserving the same slopes for the ditches, their bottom width would be one foot. The bottom width of the canal is twenty (20) feet,—the ditches occupying four (4) feet on each side, still leaves sufficient width for the railroad between them. The earth obtained from the ditches, would be sufficient to raise this space six inches, which would leave a dry solid roadway, one foot six inches, above the bottom of the ditches, ready to receive the superstructure. In a few instances the canal is "below bottom;" that is, in crossing ravines, a single bank was sometimes thrown off, forming the towingpath—the water being allowed to spread itself the whole length of the ravine. In such cases a culvert would be necessary, to drain off the water, and the towing-path would require to be leveled down to form the roadway. When a number of locks occur together it would probably be necessary to change the location for a short distance: there may be some five or six instances where this would require to be done; in all other cases the elevation could be overcome without leaving the line of the canal, and at a very trifling expense; where they occur singly, which is frequently the case, the elevation would be overcome by a plane =1056 feet long, on an inclination of fifty feet (50) to the mile. Wherever they are 1056 feet apart, the elevation would be overcome with the same ease. By adopting such grades as those on the summit division of the Western Railroad—79.9 feet per mile, the line of the canal need be departed from, in not more than one or two instances. At Granby for instance, there are six locks; the elevation overcome is, I think, thirty-six (36) feet, and the distance from the lower to the upper one, is half a mile, which brought to a plane, gives an inclination of 72 feet per mile. The planes at the locks where they occur singly, to bring them to a grade of 50 feet to the mile, would each require about (2000) two thousand cubic yards of earth to be moved, in cutting and filling which, at 10 cents per yard, gives ($200 00) two hundred dollars. But I will suppose the obstacle presented by each lock to cost in its removal ($1000 00) one thousand dollars. The whole number of locks is about sixty (60). We have then the sum of $60,000 sixty thousand dollars for this item. I will state in this place that there is one level on the canal twenty-eight miles long. The ditches give for the 80 miles, 78,160 cubic yds. of earth, at 6 cents per yd. gives ($4689 $\frac{60}{100}$) four thousand six hundred and eighty nine dollars and sixty cents. Levelling down the towing path at certrin places, I will estimate at ($500 00) five hundred, dollars per mile. The superstructure for a single track, may be safely estimated at ($5000 00) five thousand dollars per mile.

RECAPITULATION.

Planes at 60 locks.	$60,000 00
78,160 cub. yds. of earth in ditchcs, *a* 6c. . .	4,689 60
Leveling down towing-path at certain places, *a* $500 00 per mile, ...	40,000 00

Superstructure, ...	*a* $5,000	400,000 00
Total, ...		$504,689 60
Average per mile, . . .		$6,308, 62

Thus you have a railroad, for the last mentioned sum per mile, equally as good, as one, which, were it graded for the express purpose, would cost ($15,000) fifteen thousand dollars per mile. It is true there are many short curves in the canal, but it need only be borne in mind, that these curves will occur on *level grade*, and the difficulty vanishes. I think there are few of less radius than 400 feet curves, which are frequently to be found on railroads combined with steep grades. On a railroad in Pennsylvania, there are curves of 240 feet radius. Some of you may apprehend danger to such an enterprize, from the competition of other roads, either built or contemplated; but allow me to present you with this view of the case. The Hartford and New Haven railroad was estimated to cost about $800,000 00. It has probably cost fully that sum. Suppose it extended to Springfield, or even to Northampton, at the rate of ($15,000 00) fifteen thousand dollars for a single track a low estimate, and we have the sum of ($1,460,000 00) one million four hundred and sixty thousand dollars as the cost of a railroad from New Haven to Northampton, by the way of Hartford, or an average sum per mile of ($18,250 00) eighteen thousand two hundred and fifty dollars, besides having the disadvantage of not being a continuous line. It is true the Hartford and New Haven railroad is graded for a double track.

I now ask, can you have any thing to fear from a railroad which would cost nearly three times as much as yours? I may safely say nothing. Once having reached Northampton, the valley of the Connecticut is before you to invite your enterprize.

The estimate of cost which I have made is necessarily quite a rough one, but I am satisfied it cannot vary much from the truth. Locomotive power &c., have been excluded as being in this communication unnecessary.

I will here add, that the aqueducts, which might be used as viaducts—and culverts, on the canal, are of the most permanent and substantial kind.

If this communication shall be so fortunate as to awaken inquiry on the subject, I shall feel that it has not been made in vain; for I am satisfied that, the project needs but be fairly investigated, to be carried into operation.

The stock in the canal is worth so nearly nothing in the market, that I have not set down any thing, under that head, to the cost of the railroad. Its full value in the present state of the canal, might, I suspect, be added without affecting the result.

Yours, respectfully,

F. P. Holcomb, *Civil Engineer.*

We cheerfully insert the following communication from Mr. Levi Williams, and beg leave to state that he has altogether misunderstood the char-

acter of our remark appended to his article. It should be borne in mind by our subscribers and friends, that their communications have to travel some distance, to reach us, that in the next place we are obliged to have the matter for any one number on hand, at least two weeks before the date of publication, and in this way it frequently happens that a communication is not seen until it is too late to be answered in the next number, and several numbers intervene before replies can be made.

In this case, by some accident, for the numbers have always been regularly issued on the day of publication, Mr. W. had not received his numbers of Feb. 15th, nor March 15th, in the former of which we pointed out the error alluded to, and in the latter the writer explains himself. Our note was appended to the article of Mr. Williams with the intention of reminding our readers, that the mistake had been corrected, and of course, without any knowledge on the part of Mr. Williams, as he would not have undertaken to point out errors before noticed. We did not particularize, as we had supposed that the order of the papers would speak for themselves, but the misapprehension arose from the non-receipt of the numbers in question. Our intention was to point out the fact of the existence of the previous correction with the very view of intimating Mr. W.'s ignorance of its existence; we were misunderstood, and exceedingly regret having pained that gentleman for one instant. We feel satisfied that this explanation is sufficient to remove from the mind of every man, any error occasioned by our remark.

For the American Railroad Journal, and Mechanics' Magazine.

MESSRS. EDITORS.—I have just received your Journal dated April 1, 1840, in which is published my communication in regard to "Railway Constants," etc., which was forwarded to you about the 8th or 9th of March last.

By an editorial remark, at the conclusion of my communication, I perceive that the errors which I had therein pointed out, as contained in certain criticisms upon the works of Dr. Lardner and Mr. Wood, published in a former number, were corrected in the Journal of the 15th March. As the Journal of that date, and also of the 15th of April have not been received, of course, I cannot at present speak concerning anything upon this subject which was contained in the former, or may possibly be contained in the latter; for even the causes which produced the failure in the receipt of those two numbers, and the delay attending the one just received, are at present obscured. As the editorial remark, by accident, I presume, omits any reference to dates, you will readily perceive that the subject is left open for readers to infer that I had undertaken to correct errors that already stood corrected before the public. Presuming that you had no intention to give any coloring of that kind to the subject, I trust that you will have the goodness to insert this note in the next number of the Journal, and forward

me the two missing numbers to Palmyra, Wayne Co., as soon after the receipt of this, as you conveniently can.

Yours, respectfully,

April 27th, 1840. L. WILLIAMS.

COMMENCEMENT OF THE IMPROVEMENT OF THE WELLAND CANAL, AND CONTEST FOR THE WESTERN TRADE BY BRITISH TONNAGE.

We are reminded by the following, which we take from the Kingston Chronicle of the 27th of May, of the importance of an enlarged communication from Lake Ontario to the Hudson. If we recollect, such are the advantages, of natural waters by the Oswego river and Lake Oneida to Wood Creek, 58 miles, that there would only be about 100 miles of canal to make, from that point of the river to the Hudson. The estimated expense for a canal to Utica, by this route 9 feet deep, 90 feet wide, with locks 30 feet wide by 130 feet long, was about $1,300 000,—it was calculated, and with more certainty than the enlargement of the Erie canal, that a separate canal of the same dimensions, could have been constructed along the north side of the Mohawk for six millions of dollars.

Time will test which was the best project for the State of New York, to retain the Western trade. The contest hereafter, will be to take it from lake Ontario and the outlet of that lake—the St. Lawrence.

The saving of about 150 miles of toll on the Erie canal, and the well known fact, that the extension of a voyage three or four days adds but little to the freight which has been overlooked in a desire to prevent "*the Western trade being let down into lake Ontario*,"—and that it would take the St. Lawrence.

COMMENCEMENT OF OUR PUBLIC IMPROVEMENTS.—WELLAND CANAL.

It is with sincere pleasure we find the following announcement in the Montreal Gazette of the 21st inst. The speedy enlargement of the Welland Canal, is a matter of vast importance, and when the corresponding improvements from Prescot to Montreal are effected, the St. Lawrence will not only compete with the Hudson river, but with the Mississippi, for the commerce of the Great West.

The immediate commencement of the Welland canal, is at present of importance in another point of view, namely, as affording prompt employment for the more destitute portion of the numerous emigrants now daily arriving at Quebec.

"We are happy to learn that His Excellency the Governor General has assented to the immediate commencement of the permanent work on the Welland canal. The dimensions of the locks are not decided on, but nothing less than twenty-four feet width, by one hundred and ten feet in length, has been proposed. A liberal sum has been authorized to procure materials, and the work will be prosecuted with vigor.

The importance of this undertaking is now generally acknowledged, and we understand the increase of business this year far exceeds the past, up to the same period. As this is the point where the contest between the two great rivals, the St. Lawrence and the Hudson rivers, will commence, for the commerce of Lake Erie, no time should be lost in finishing this work. *It will, in a measure, counteract the effects which the enlarge-*

ment of the Erie canal would otherwise produce, and may retard the commencement of the canal around the Falls of Niagara, which the Legislature of the State of New York, during the last session, authorized the General Government to construct, by ceding the lands necessary for that purpose."

PROGRESS OF INTERNAL IMPROVEMENT.—It gives us pleasure to state, that the Lehigh company's railroad, of 20 miles in length, which connects the Lehigh canal at White Haven with the North Branch of the Susquehanna at Wilkesbare, is on the eve of being ready for use. Fifteen miles of the road extending from White Haven to Solomon's Gap will be opened for trade early in July next. The remaining distance of five miles will be ready for business in September.

A letter from that quarter states as follows:

"From present prospects nearly all the merchandize, &c., for the Wyoming Valley and the Upper North Branch of the Susquehanna will come up the Lehigh navigation, and pass over the railroad this fall."

Another letter says—"A great many of the North Branch lumbermen are anxiously inquiring about the completion of the Lehigh and Susquehanna railroad. They express a strong desire to have it finished, so as to enable them to bring all their *choice* lumber this way."

We learn that the lumber from the great and newly opened timber region of the Upper Lehigh has begun to descend the navigation in boats, &c., in considerable quantities, and that a large and regular business in that line will continue to be done.—*North American.*

THE NEW SAFETY BREAK.

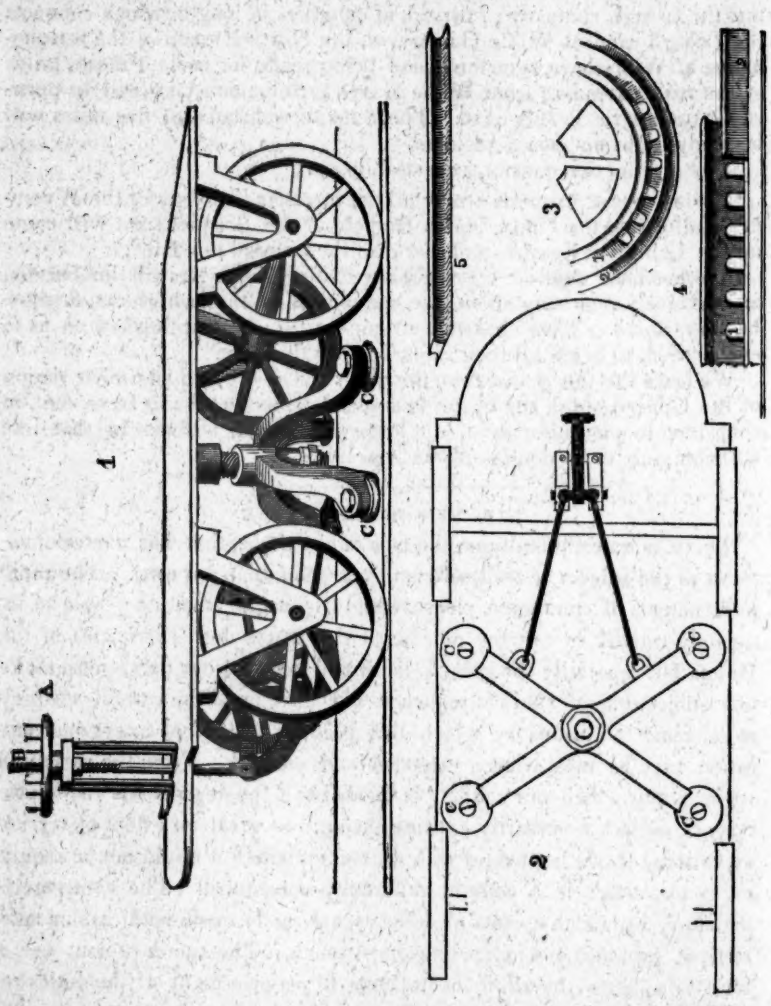
There is no community on the face of the globe, that has a greater interest in the subject of railroad communication, than our own. The rapid interchanges of commerce, pleasure and friendship, among a people so intimately related as are the citizens of the States and Territories of the Union, but especially the great breadth and extent of our dominions, make this subject one of vital consequence and urge us to the careful scrutiny in selecting the means by which this peculiar method of inter-communication may be most wisely extended and secured. From the variety of regions, into which our country is divided and the depressions and elevations of surface necessarily existing through so great an extent of territory, railroad travel is attended with difficulties which it might not be required to encounter in a country differently constituted. The contrivance, therefore, by which ascents or descents are safely made with cars or locomotives, becomes one of leading importance. The one in present use, it must be admitted by all, is incompetent to perform many of the duties required of it, and the way is clearly open for the introduction of any efficient substitute.

Such an one, without prejudice or bias, is found, we think, in "*King's Safety Break*," recently patented; and unless some substantial objection (for none such has as yet been advanced) can be discovered, we look for its speedy employment on the chief railways of the country. If its character be that which is claimed for it, it must be evident that such roads as

are furnished with this Break would enjoy a great advantage over others, employing the ordinary Break, and in the upshot, succeed in diverting travel from such routes as are unprovided with the new contrivance.

We give below, the circular and drawings of the patentee, which explain the leading features of his invention.

PUBLIC SECURITY.



Observations.—It will readily appear, on examination, that this safety arrangment is susceptible of any amount of strength in its construction, and that it is calculated for the ordinary raised rail. Description for the above cut. No. 1—The revolving or horizontal wheel A will cause the vertical screw B to ascend or descend; which, acting on the levers by the connection of a quadrant, will cause the rollers on the end of the levers marked C to approach or recede from the inner sides of the rails, as may be desired. The cut marked No. 2, letters C C C C, represent the angles of the levers

and their connection. Numbers 3 and 4 are each numbered 1 and 2, the number 1 showing the cog arrangement for ascents in the wheel and rail —number 2 showing an additonal tread on the wheel and the line of rail on which it would engage. This arrangement is simple, although very peculiar, and is fully explained in my specification. A few words in anticipation of an objection that might possible present itself. It is this: that the rails would be liable to be moved when the power is applied. Such apprehension is groundless (from the fact the adhesive power is all that is brought in action) as much as the opinion that existed in the infancy of railroads, that the adhesion of the wheels on the rails would be so trifling that cogs would be necessary for a level road. Number 5 is a section of the ordinary rail. This improvement is believed to be valuable on three accounts: First, by its negative use, an engine or car could not be run off the rails: Second, its immense power as a safety brake to prevent accidents, collisions, &c.: Third, descents of any grade can positively be travelled at any given speed desired, with absolute control and security, independent of stationary engines, ropes, &c. Also, it is believed that this appliance, in connection with the cog arrangement for ascents, would abrogate the stationary engine as unnecessary. It may be observed that a calculation is made for raising the levers when necessary; and should it be desirable, it can be so planed as to raise and lower them when required, by the same operation that causes their original action. This extraordinary power is graduating and accommodating, and in its operation will suit itself to any and every possible contingency; also, it is so easy and ready in its action, that a boy could manage and control it. A working model can be seen by all interested.

Patent.—Dated May 8th, 1840.

Respectfully submitted,

MATTHEW W. KING, *New York.*

We recommend Engineers and railroad proprietors, (and the public too, who have an interest quite as deep, in this matter) to examine the model, at the Mechanics' Institute in this city.

The Monthly Chronicle for May, which is just published, contains a very interesting article on the railroads of Belgium. We extract from it the following:

RAILROADS OF BELGIUM.

In this prodigious movement of nearly seven millions of persons transported in a period of four years, if there were no other advantage than the more easy and complete amalgamation of all parts of the country, and the exchange of ideas which results from the contact of men with one another, this alone would be an excellent result, political and moral; but the economy of time, the developement of industry, the facilities for bussiness which such a circulation must promote, cannot be estimated in figures. Belgium already reaps the fruits of it.

The Belgian Government had reduced its tariffs to an excessive extreme. It has since been found indispensable to raise them, and the result has been fovorable.

In Sept. 1838, the same number of sections were in operation as in 1839; the mean price received, and the total produce, at these two epochs, were as follows:

	Mean price paid by each passenger.	Total produce.
In September, 1838, -	1 fr. 43 c.	412,542 fr. 28 c.
" 1839, - -	2 6	461,339 31

This change had become urgent, for without it the productiveness of rail-

roads would have been left in doubt. The following table will show the effect of it.

	Receipts.	Expenses.	Nett produce.
1835, 8 months,	268,997 fr. 50 c.	168,772 fr. 73 c.	100,224 fr. 77 c.
1836,	835,132 85	431,135 67	403,997 18
1837,	1,416,982 94	1,189,988 62	226,994 32
1838,	3,097,833 40	2,733,167 93	364,665 47
1839, 9 months,	3,140,999 99	1,899,006 52	1,241,993 47
	8,759,946 fr. 68 c.	6,422,071 fr. 47 c.	2,337,875 fr. 21 c.

The new tariff was established by royal decree, on the third of February, 1839, and we see that the net produce of the first nine months of this year is alone greater than the total net produce of the three years and eight months that preceded it. On account of the increase of revenue which results from the raising of the tariff and from the transporting of merchandize, the Belgian railroads become a means of profitable speculation, especially a speculation made by the State, under the particular circumstances. The former tariff was ruinous.

It should be observed that the working of the line from Brussels to Antwerp, the only one in operation in 1839, gave a greater net profit tha nof the year 1838, when ten sections were put in operation.

This result shows that all the routes for the Belgian railroads are not equally well adapted; that there are several of them that do not clear the expenses of operating them; and that they ought not to have been undertaken, if it were not necessary to satisfy local exigencies.

The transportation of merchandize was commenced in 1838. Before this time only baggage was transported, and it was not until 1839 that it reached an amount of much importance. The following table will show the progress of this branch of transportation:

	Produce of the baggage.	Produce of merchandize.
1837,	16,994 fr. 36 c.	
1838,	103,421 39	58,594 fr. 28 c.
1839, in 10 months,	112,768 46	351,754 90

The increase of the receipts on merchandize is more remarkable still, if we follow it, month by month, in the course of that year.

January,	7,713 fr.	June,	37,998 fr.
February,	7,159 50 c.	July,	48,564
March,	6,277 50	August,	64,272 70 c.
April,	13,097	September,	67,584
May,	24,291 50	October,	74,790 70

And the minister declares that the supply of 400 wagons for merchandize is far from being sufficient for all their wants.

The report of the minister states a remarkable fact, and one at variance with the anticipations of most persons. It was supposed that this new mode of transport, introduced to the extent now practiced in Belgium, would destroy the old, and that the use of horses and ordinary carriages would be superseded. Such is not the fact. On the contrary, while railroads have been, in succession, extending themselves over the whole of the soil of Belgium, the produce of the tolls on the ordinary roads, instead of diminishing, has progressively increased. In proof of this the following statement of the produce of the tolls is given.

1831,	2,390,882 fr.	1836,	2,447,985 fr.
1832,	2,195,343	1837,	2,584,791
1833,	2,360,464	1838,	2,759,548
1834,	2,415,769	1839, 10 months,	2,749,301
1835,	2,385,430		

Mr. Nothomb makes a comparison of the advantages to the public, in time and money, between the old mode of travelling by diligences, and the rate of travelling under the new tariff, which went into operation in 1839. The average result is a saving of *half the time*, and of 33 per cent. in the price.

The saving in price is thus subdivided: in diligences 15 per cent.; chars-a-bancs 30 per cent.; wagons 60 per cent. It is the lower class who profit most by the establishment of railroads. Teey not only find the means of transport, which were almost denied them before, but they find the means of labor increased. It is officially stated in this report, that the building of the railroads of Belgium has produced the result of increasiag the produce of all the indirect taxes, and has enabled the state to alleviate the effect of the late manufacturing crisis, by affording it the means of giving orders upon the principal manufactories of the country, for future wants.

THE UNITED STATES STEAMER.

This vessel is admitted by all who have inspected her to be beautifully modelled. Her frame throughout is of the choicest British "heart of oak." Her timbers, from her kelson to her bilges, are laid close together, and interially caulked, so that her bottom to that extent, would be water tight, even if her planks were removed. Her garboard stroke (of 8 inch plank) is bolted together through and throughout her kelson. Her flooring timbers are all cogged, or dowelled together, and further secured by strong rods of iron driven through them, fore and aft. Her bottom planks are of American elm; and such is the joint thickness of these and the timbers, that they form a solid mass of 18 inches in thickness. Her sides are proportionately strong, and so bound together, that it would seem impossible that she could be at all shaken by any casualty at sea. Her bends are of African oak; her upper planks of English oak and fine red pine, which last is, between wind and water, equal in durability to any other timber. Her sider are strengthened by bands or strips of iron, of 5 inches in breadth and $\frac{3}{4}$ inch thick, counter-sunk diagonally into the timbers, and bolted through them, those forward inclining towards the stern, and those aft towards the bow. Over these are diagonal wooden riders of English oak, each 9 inches by 6 inches in thickness, also bolted through, so that both form counteracting stays, or binders, giving the vessel extraordimary strength. Her clamps are all screw bolted through the sides; the fore and aft beams of the boiler hatch are of iron, and interiorly she is fairly studded with the ends of the screw bolts from her sides. The hold presents a magnificent specimen of the magnitude and perfection to which naval architecture has attained. The frame work of the engines is an exceedingly massy piece of carpentry—composed of immense beams of African oak. The thickness of these, from the flooring, is no less than three feet.

The United States will be rigged with fore-topmast and top-gallant-mast. Under the taffrail are the arms of England on one side, and those of America on the other. The following are her dimensions:

Length from stem to stern,	235 feet
" of keel,	215 feet
Breadth across the centre,	60 feet
Depth of hold,	38 feet 6 inches
Height between decks,	7 feet 6 inches
Length of each saloon, fore and aft,	70 feet
Breadth " " "	42 feet
Burden, besides her coals,	800 tons
Total admeasurement,	1400 tons
Engines,	420 horse power.

We have been thus particular in order to give a slight idea of these truly "gems of the sea." In short, when we say that nothing that art can invent or labor and perseverance accomplish, it will be understood that little is wanting in order to complete the perfection of these "offerings of our own times;" upon the construction of which, as a nation, we may justly pride ourselves.

London Surveyor, Engineer, and Architect.

Comparative Statement of Arrivals, Tonnage and Passengers at the Port of Quebec, to the 23rd May inclusive, for the years 1839 *and* 40.

	Vessels.	*Tonnage.*	*Passengers.*
1840, ...	250	90,686	2223
1839, ...	132	40,135	435
More this year	118	50,551	1788

Office of the Chief Agent for Emigration,
Quebec, 23d May, 1840.

Return of the number of Emigrants arrived at the Port of Quebec during the week ending the 23d instant:

England, ...	421
Ireland, ...	2275
Scotland, ...	143
Lower Ports	0
	2839
Previously reported, ...	898
	3737
To corresponding period last year,	620
Increase in favour of 1840, . . .	3117

A. C. Buchanan, *Chief Agent.*

Cast Iron Railroad.—We have thus far delayed making any comments on the cast iron railroad, laid on the Greenwood addition to the Mount Carbon railroad, more than the mere mention of its completion. This was for the purpose of obtaining the estimates of its cost and other data which we presumed would be of interest to our friends; these have been politely furnisned us by Andrew Russel, Esq. agent for the Greenwood property, and by their aid we lay the follwing facts before the public:

The length of the road from the Mount Carbon road to the Steam Mill, which has been relaid with cast iron rails is 1200 feet, a double track; making 4800 lineal feet or 1600 yards of rail. In this distance there are 9 full turnouts or crossing places, which require 486 lineal feet or 162 yards of rail, exclusive of the plate. The rail is called the *house joice pattern*, and is cast in lengths of six feet; the pattern was first made for 70 lbs. of iron to the yard of rail, but was altered by increasing the size and strength of the flanges to about 80 lbs. to the yard. The quantity of rails used in constructing the whole road, was about 62 tons, they are laid on sills which are 3 feet apart from centre to centre, these being again supported on the graded road by square blocks of stone under the end of each sill, where the rail rests on it. The sills cost 42 cents each, and the cost of laying the road, including grading, of which but little was required, it being laid on the old track, was 80 cents per panel of 3 feet. Cost of putting in each turnout for labor and workmansh: p $45.

The road has now been in use some weeks, and heavy trains of loaded coal cars have passed over it, and it does not appear to give way in the least, nor has a single rail broken. It is believed by all to be strong enough for any road where horse power alone is used. What effect the frost in the fall may have on it, is yet to be tested.

Taking the foregoing data, as the basis of a calculation, a mile of a railroad laid with these cast iron rails, will cost as follows:

1760 yds., 80 lbs. to a yard, is a fraction over 62 $\frac{3}{10}$ tons, which for double track is 125 $\frac{6}{10}$ tons, costing say, $44 per ton,	$5,400 80
760 panels of 3 feet at 80 cts.	1,508 00
1760 sills at 42 cts.	739 20
3600 lbs., about, of bolts and spikes at 10 cents,	360 00
	$7,008 00
Contingencies,	92 00
Cost per mile,	$8,000 00

These rails were cast by Mr. William Lyman, at his furnace on the Island; it was originally contemplated to make them at the blast furnace, but as that blew out shortly after the contract was made, Mr. L. erected a small cupola, for the purpose, and made them of Anthracite Iron of his own smelting.

THE NEW YORK AND ALBANY RAILROAD.

The arrival at Boston of a steamer from Liverpool, the first of a line to sail half monthly, has at last aroused the attention of our citizens to the quiet, but vigorous efforts of our enterprising neighbors; who desire to win back a part of the foreign and coasting trade which the *Packet system* centered in New York after the completion of the Erie canal.

Our success with canals only stimulated Eastern enterprise. They cast about for a plan to share with us the Western trade. They examined the line for a canal to connect Boston with lakes Champlain and Ontario, and were obliged to abandon it. The complete success of the Liverpool and Manchester railway in transporting large burthens of merchandize, produce, live stock, &c., turned their attention to this new species of improvement. The capital of New England has been directed with profit to railways diverging from Boston. The statesmen and merchants of Massachusetts fixed their eyes on the Western trade entering at the outlet of the Erie and Champlain canals. They resolved to participate in it, by the construction of a *railway* from their *Albany wharf* to our State line at West Stockbridge, and immediately put measures in a train for the accomplishment of the object. Our Legislature, in the spirit of liberality, granted a charter to construct a railway from Albany to West Stockbridge, with authority to the city of Albany to issue their bonds to the extent of $650,000, on the pledge faith of the city, to be used towards the completion of said road.

The citizens of Boston and Massachusetts, with a liberality that certainly deserves thanks of the city of Albany, have cashed these bonds, and have commenced the construction of this important work in this State, under the direction of their own Engineer and Agent, and will no doubt have it finished the ensuing year.

The Editors of the Journal of Commerce, in a very interesting article on this subject, in their paper of the 4th inst. truly say, "It may now be taken for granted that before the winter of 1841-2, there will be a continuous railroad in operation from Boston to Albany, and from thence to Buffalo,—

a distance of over 500 miles (517) in nearly a straight line." They add, "The North river is closed three to four months, and the Erie canal five months in the year. On the completion of the Albany and West Stockbridge railroad to Boston, she will come in with us as a competitor for the Western trade, with or without our consent." They then ask the question, if our property holders will permit Boston "to have the trade *exclusively* for one-third of the year?" There can be but one response to this,—*No.*

The period has arrived when the construction of the New York and Albany railroad, within our own State and jurisdiction, cannot be looked upon by our citizens with indifference, nor can it any longer be scoffed at as a "*visionary project.*" It is a work of the first necessity to the commerce of this city. The surveys and estimates, with the report of Mr. Edwin F. Johnson, Civil Engineer, maps and profiles of the road, have put this question beyond cavil.

The fall of real estate in the first ward, and rents generally in this city may, in part be attributed to the neglect of our best interests. Whilst we have been worshipping the enlargement of the Erie canal, at an expense of not less than thirty millions of dollars, our neighbors have been quietly engaged in constructing the "better improvement of the age,"—railways—to take from us our spring and all our winter business in the article of bread stuffs.

The cost of the New York and Albany railroad is the next question. It can be demonstrated by proposals presented from responsible men, *with adequate security*, that a single track with suitable turnouts, from Harlem river to Greenbush, opposite Albany, (140 71 miles,) can be constructed and put in operation for $2,450,000. This sum tncludes 10 locomotive engines, 40 large double passenger cars, and 100 freight cars, but not the ground, or *right of way*, on which to construct the road.

It has been proposed, for the sum of $2,450,000, to make the road, equal, if not superior, to the Utica and Schenectady, or Utica and Syracuse railroad, both of which are considered good roads.

If it shall be determined to intersect "the Boston and Albany railroad" in Columbia county on the line of the Hudson and Berkshire road, at a point to be agreed on between Ghent and Groats, there will be a saving in the cost, of twenty-five miles of railroad, at the above rate. Provision, it is understood, has been made in the Albany and Stockbridge charter, to secure the use of *the Boston road*, on equitable terms to the New York and Albany railway. It is not pretended that the sum of say $2,000,000 to reach Groat's (115 miles, by recent survey,) can construct as good a superstructure as the Western railway will have. With an increase of say half a million of dollars to add to the weight of the iron and fixtures to receive the T rail, of say sixty tons to the mile, the road may compare with the best roads in the United States. The question naturally arises, whence is the diminished cost of the New York and Albany railroad, compared with the Boston and Worcester, and the same line continued to Springfield, and to our State line at West Stockbridge? The answer is obvious. On a glance at the map it will be perceived, the Western railroad crosses a succession of elevated ridges of land, at right angles, and this too over several summits. The one near Pittsfield is 1440 feet above tide water. The New York and Albany railroad, by a most singular formation of the earth, (arising from four streams, running in contrary directions North and South for 100 miles on the line,) gives the road a succession of Valleys, to pass its summit, in the town of North East, Dutchess County, at the lowest depression which exists over the Alleghany mountains, 769 feet above tide water; with the exception of the pass through the Highlands. This fact

also proves that the New York and Albany railroad cannot be competed with by any route from Boston to Charleston, to drain the trade North of the Ohio river, and from the St. Lawrence volley.

The New York and Erie railroad has a summit in Alleghany county of 1780 feet, and a succession of high-lands at right angles with the road. Pennsylvania has a summit of 2397 feet. Maryland, 2754 feet, or a tunnel of 4 miles. Virginia, 2551 feet. South Carolina, 2168 feet. Obstructions from snow, over such elevated ridges, in a given latitude, may be calculated on, nearly in proportion to the ratio of elevations. The comparison of grades and curves on these several lines, is more favorable for the line from New York by Albany to Baffalo. The distance is also less to the Erie, to wit, 464 miles.

Number two, will endeavor to answer the question, "Can the New York and Albany railroad, pay an interest on its cost, with the Hudson river distant 15 to 25 miles, with steamboats running at $1 to $2 exclusive of meals? J. E. B.

PENNSYLVANIA APPROPRIATION BILL.

The appropriation bill reported by Mr. Hegins of Northumberland, contains the following appropriations:

To complete the railway to avoid the inclined plane at Columbia,	$58,000
To purchase locomotives and ropes on the Columbia & Portage railroad,	30,000
Th renew the North track of the Columbia road from the 22d milestone to White Hall,	100,000
To pay debts due for repairs on the Sinnemahoning extension West Branch,	34,124
To pay debts due on the Gettysburg railroad,	150,000
To pay debts due on the Alleghany feeder,	1,100
To pay balance due for doubling locks on the Eastern division of the canal,	7,402
For repairs on the different lines of canals and railroads,	600,000
For new work on finished lines, pay of canal commissioners, &c.	30,000
To pay debts due for motive power and repairs contracted prior to first Febuary 1839,	50,000
To pay damages,	30,000
To the Erie extension,	600,000
To the North Branch do.	600,000
Wisconisco canal,	60,000
	$2,350,626

In addition to the foregoing, the bill proposes an appropriation sufficient to pay the interest falling due on the public debt on the 1st of July next.

Railroad Reports.—The report presented to the proprietors of the London and Birmingham railway, at the late half-yearly meeting, contains several statements of a highly satisfactory nature, to which we may here briefly advert, as all other companies must look with interest to the results afforded by this magnificent and ably conducted undertaking. The directors remark that the receipts for passengers have been advancing steadily since the early part of the year; and it appears that the number conveyed by the railway, for the six months, has been 268,527—the daily average for the whole length of the line having been 857. The revenue for the half-year amounted to 270,814*l.*; the charges upon this sum, including interest loans, and a reservation of 14,000*l.* for depreciation of stock, was

165,684*l.*, leaving an available balance of clear profit (including a surplus of 7,083*l.* from the previous half-year), amounting to 112,213*l.* It was recommended by the directors that a dividend of 3*l.* 10s. share (7 per cent. per annum), and amounting to 109,375*l.*, should be declared; and the report was, of course, carried unanimously, having evidently produced feelings of satisfaction in every proprietor present.

OPENING OF THE TIDE-WATER CANAL FROM COLUMBIA TO HAVRE-DE-GRACE, TUESDAY, MAY 27.

The stockholders and invited guests left the city in a special railroad line (three cars) at 5 o'clock, with a band of music. Breakfasted at Wilmington, and reached the shore of the Chesapeake (sixty miles) at a quarter past 9 o'clock. They were then conveyed across the river in a mammoth steamboat to Havre-de-Grace—the boat moving off so gently, that one on board whose eyes were not directed to the shore, water, or sky, could not have known that she was in motion, for the rotation of the wheels was not heard. In three quarters of an hour the Baltimore company arrived, also in a special train (eight cars) accompanied by a band. That from Columbia, including the President, Chief Engineer, and others, came in a canal boat. The line of March was then taken up in the following order:

Music—Engineers and Assistants—Superintendent of Canal and Collector of Tolls. Committee of Arrangements. State Executive Officers of Pennsylvania, Delaware, and Maryland. Chief Justice of the United States, Judges of District, County and City Courts. Mayor and Council of Baltimore Commissioners of Havre-de-Grace. Invited guests and stockholders, six abreast.

The procession moved to the Canal basin, and embarked on board the boats, (eight) with flying streamers and music, and decorated with a profusion of busines of the very beautiful native laurel (Kalmia augustifolia) then, fortunately, in full bloom, on the wooded, even hills, along which the boats passed to Deer Creek, a distance of five miles.

As the boats proceeded, the company were saluted with a national salute from artillery placed on the heights, and from a piece in a flat boat from Columbia. Ample refreshments were provided on board of the boats.—Here it may be noticed, that the scenery on the Cecil county side of the river is highly picturesque; the land is high, and apparently under good cultivation, with some large stone mansions embosomed in forest trees, the former owners of which were noted for their hospitality. Among others, is that of the late Philip Thomas, whose honest, unaffected, but sometimes rather rough manners, are remembered by friends who justly esteemed him.

The company then returned to the Canal Basin, (again saluted by artillery) and proceeded to the steamboat Carroll, moored at the outlet lock, when an address was delivered by Mr. Bose, of Baltimore, one of the directors in which he took a view of the internal improvements of Pennsylvania, which, for accuracy, could not have been exceeded by the best informed Pennsylvanian on those subjects, and for elegance of composition, would be sufficient to stamp him as a first rate writer, had not that character been long since acquired by his able productions in the "American." As the address will doubtless be published, it would be premature to attempt even a sketch of it. The company then descended to the cabin, with keen appetites, from the fresh and delightful early morning air they had inhaled, aided by the exercise they had taken, and the excitement of the scenery, pleasant social intercourse, and the occasion generally, to a well

spread and handsomely arranged table, provided by Mr. Seymour of Havre de-Grace. Those who could not be accommodated below solaced themselves with good things on deck, or waited until there was room in the cabin. After dinner, the company met on deck when they were addressed by Mr. Biddle, of Philadelphia, on the subject of American improvements generally—railroads and canals—their amazing extent, and incalculable importance in promoting the prosperity of the Union. The address, it is understood, will be written out for the "American," of Baltimore. Toasts were then drank. At 6 P. M., the company from Philadelphia walked to the wharf at Havre de-Grace, and were again conveyed across the river, in the noble steamboat, which, without a perceptible movement, or noise to those engaged in conversation, glided gently off into the stream. At Wilmington, they were once more refreshed by supper, and reached Philadelphia at eleven o'clock, without the slightest accident.

On the whole, a more delightful day was never spent by mortals; and those who partook of the hospitality of the Directors of the Corporation, cannot ever forget it.

ONE PRESENT.

SPEECH OF MR. NICHOLAS BIDDLE, ON OPENING THE TIDE-WATER CANAL, AT HAVRE DE GRACE.

The Stockholders of Philadelphia—whose public spirit so largely aided in the completion of the work we meet to celebrate.

After this toast was announced, Nicholas Biddle, Esq. rose amidst the calls and cheers of the company, and responded to it in the following terms:

Mr. Biddle said, that ss one of the Stockholders of Philadelphia, he returned thanks for the cordiality with which the sentiment had been received. In the early stages of the work some fears had been entertained lest the trade of Pennsylvania might be thus diverted from the exclusively Pennsylvanian channels. But this anxiety was only momentary. We believed that it was due to the great interests of the interior, that they should be allowed to seek their natural course to the sea; that this trade, after it reached the Chesapeake, would still be an object of generous competition between our two commercial cities; and more especially, we felt that truth too often neglected in the jealousy of rivals, that there is quite room enough in the world for us all. We, therefore, the stockholders of Pennsylvania, unite as cordially as you do, gentlemen of Maryland, in celebrating the success of our joint labors.

But for myself I rejoice the more at it, because its completion, and the respectable assemblage who have come to witness it, prove the unabated interest felt in the prosecution of those great-works which are now in danger from the caprices of public opinion. Some years ago, with the characteristic enthusiasm of our countrymen, and some touch perhaps, of their imprudence, we began an extended system of internal communication. But before the works are finished the general troubles of both Europe and America rendered it more difficult to raise the funds for their completion. and some disappointment arose in the sanguine hopes of immediate profits from them:—so that now the ardor with which we began is succeeded by a relaxation of effort, by a tone of subdued expectation, nay often by a timid and childish despondency. Men begin to complain how much these works have cost—as if we expected to have them for nothing. They lament that we have paid more than the estimates, as if any man ever built a dwelling or barn that did not cost more than was as at first imagined. They regret that there was much waste in erecting them, as if, in a career

totally new, young nations, like young men, must not pay for their experience—too happy to have youth, with all its elasticity, on their side, to repair, a thousand fold, all their errors.

These are the maudlin lamentations of men unfit to lead a great nation. Instead of disparaging, or regretting, or desponding over them, we should be proud of them, as the noblest achievements of the country. Cut off, by the happy tranquility of the world, from the pursuit of military glory, the great distinction among nations now is their advance in civilization—in moral instruction, in social improvement—more especially in enterprises for developing their resources; and in these we may claim for the energy of this infant nation, a superiority both in the character and the multitude of its works, over not merely the ancient nations but over the foremost of our cotemporaries.

With respect to ancient times, one may be allowed to wonder or to smile at those stupendous monuments which our childhood was drilled to admire. —Take for instance the pyramids of Egypt. Within a space of one hundred miles, there are in Egypt, about two hundred masses of rocks, brought from a distance and piled into what are called pyramids. A single one of these is estimated to contain sixty millions of tons of stone—and to build one of them required the labor of one hundred thousand men for twenty years. Look then at the immense waste of human labor upon these huge absurdities in stone. For no man can tell who built them—no man can tell what they were built for—and the only important discovery which has rewarded the labors of our day, is a parcel of relics which proved to be, not as was fondly hoped, the remains of at least a sovereign—but the mere thigh bone of a cow! Alongside of these pyramids is a low sandy desert about sixty miles long, where a canal from the Red Sea to the Mediterranean would cut off the circumnavigation of the whole continent of Africa. This canal, not requiring one forrth of the labor of that which we this day visited, was at last made by the efforts of a succession of Egyptian Kings—but afterwards closed, and now no longer exists. Why there is a little strip of land about five miles across from Corinth, where a canal would save the circuit of the Morea. Half a dozen emperors, and the greatest of them all, Julius Cæsar among the number, tried in vain to make this canal, which was abandoned, because, it is said, they did not understand how to make locks, such as we see before us. Contrast withthese the gigantic utilities of this country.

I remember, for it seems but yesterday, when a few of us sent an engineer to Europe, to inquire about these strange novelties which rumour had announced under the name of Railroads. While they have made little progress in Europe—out of England—there are in this country, according to the report of the Austrian Commissioner, sent to examine them, more than four thousand miles of railroads: and in return for the mission of our engineer, there have been Commissioners sent by the Governments of France and Russia, and Austria, to examine and to take models of these improvements. The American locomotives are used both in England and on the Continent. It is probably true that there are more canals and railroads in the United States than in the whole of Europe put together. And shall we not feel proud of these distinctions? The first to invent and to use the steamboat—the foremost in canals and railroads—the great tests of civilization—are not these worth money—are they not worth infinitely more than money? Does not every man of us feel better because he belongs to an active and distinguished community? And shall we be dissuaded from these high pursuits—by small calculations and smaller calculators—as if a great nation could be ciphered out of its renown!

But these honors stand by the side of great responsibilities—and we are now called upon to prove that we are worthy of them. You all remember that three years ago, when the great commercial embarrassments fell upon us, our merchants were largely indebted to Europe, and there arose abroad intense alarms about these debts. But true to themselves and to their country, the American merchants made the most extraordinary efforts to pay their debts, and all Europe rang with applauses of the energy and uprightness of the commercial character of this nation. And now, when the States themselves have become in turn the debtors, the same alarms are renewed, sharpened by the violence of political antipathies. It is a favorite theme with those who wish to degrade all free insititutions that these Democratic Governments of ours may do well enough in the sunshine, but are wholly unfit for storms;—that our Democratic assemblies are prompt to borrow but impotent to pay;—and that in the loose and feeble structure of our political system the representatives are afraid to ask, and the people unwilling to give the supplies necessary to sustain their credit.

Now it is duty to stand up for the governments of our own choice—to prove that a democracy is just as honest as the most servile despotism—that as all the people have voted to borrow, and all shared in its benefits, all are for that reason, the more ready to pay. That truth we must demonstrate at all hazards and at every sacrifice. And fortunately, it can be done without any sacrifice at all.

For, after all, what is this debt of ours? Take the most indebted of all the States—our own Pennsylvania. She owes a debt of thirty-five millions of dollars—payable through a long series of years—during which her improvements are growing in productiveness, and all that is now wanted is the mere interest on it. Thirty-five millions! Why the present debt of France is one thousand millions of dollars, all of which is absolutely gone without leaving a single particle of benefit. Spent at Moscow—spent at Waterloo—spent in first conquering the allies and then in paying indemnities to the same Allies, when they in turn became conquerors. Thirty-five millions! Why the debt of England is four thousand millions of dollars—totally sunk like that of France—invested in profitless victories and irreparable losses,—so many millions for losing America—so many millions for subsiding the Continental powers—so many more for invading France but all gone forever. While for the whole of our debt we have actually in our possession the improvements purchased by it in full operation—yielding a present revenue to be infinitely augmented hereafter, and adding to the value of the property, a hundred fold their cost. Look again. The entire debt of the whole twenty-six States of the Union is not more than one fifth of the debt of France—nor one twentieth of the debt of England—spent without a vestage remaining. To anticipate any infidelity to such engagements is a reproach not less on their understanding than on their integrity. Not to sustain their credit is to throw away all future resources of that kind for the completion of these works themselves—since how can a State expect to be trusted hereafter if it is faithless to those that trusted it before. But a far nobler motive is the dishonor which it would bring not merely on the States, but on the great cause of political freedom. Whatever shades of distinction we may find among ourselves, to foreign nations we are essentially one single people. The stain which falls on the youngest member of the Confederacy spreads over the whole. The States are firmly linked hand in hand with each other, and the electric shock which touches one instantly thrills through the whole. The first State then, which shall be false to its engagements, should be tabooed—stricken from the rolls. Her fallen star would be blotted from the nation's flag as no long-

er worthy to share its glories—her very soil would be deemed pestilential, and men would go round its borders to shun its infection. But that can never be. If for a barren tract of pine logs—or even a more barren diplomatic punctilio, we should be summoned to war for some real or imagined wrong—when once the blood of the country is up, no sacrifice of men or treasure would be withheld, and shall we be less zealous to redeem the pledged honour of the nation? States may sometimes be overborne by numbers in a field of battle—sometimes desolated by pestilence; but a voluntary dishonor—a disgrace by Act of Assembly—this scattering with our own hands a blight over our golden harvest fields—is inconceivable. Should that day come, let us first tear from our history the past glories of the country which we will be unworthy to inherit—and destroy these works themselves, which, instead of being the trophies of honorable industry, will become the lasting monuments of our shame.

And now let our public men look to it. We private citizens, have given them the country's honor. Distrust these paltry demagogues by whom public life is too often invested—men with no property to assess and no character to lose; men who make a scanty living by the trade of popularity, and who fear to hazard the least portion of their precarious subsistence. These men are always ready to inflame our passions against each other, but never dare to remind us of our duties, because they can succeed only by bringing us down to their own level. It is such men, and such men alone, who would whisper into the country's ear these base counsels—plunder the strangers who have confided in us. But the true statesman will scorn such appeals to our selfishness. It is his duty, instead of yielding to these momentary weaknesses, which will occasionally overshadow for a moment the brightest public spirit, to rally up the country to the high thoughts which befit its destiny—to fix its gaze upon some elevated object and carry his countrymen up to it, regardless of the timid who falter and the faithless who desert. That man we shall follow because we see that he is fit to lead. For myself, I am, like all of us, a mere private citizen, without the slightest pecuniary interest at stake, and if I am to be taxed, it will be exclusively for the benefit of others. But you or I—or any of us, less anxious to escape from the degradation of witnessing our native commonwealths disgraced, the whole Union tarnished, and the cause of free institutions, of which we are guardians, forever overthrown!

The time is coming when we, the people of the country, shall be called upon to redistribute its honors. On that day we shall look out, not for the miserable demagogue who insulted us by not daring to ask us to pay our honest debts—not for the little politician with his endless speeches, which he thinks immortal, when they are only eternal—but we shall seek out the man who, in the hour of public danger, first flung down the faded livery of party, and put on the true blue uniform of his country—and was then foremost in action. To that man, from whatever ranks he came, we shall give our voices for any station to which his honest ambition may aspire. Such a moment is the present. Let then our public men come forward, and in a tone of honest manliness tell us the public wants, and ask us to relieve them. They will be answered from every quarter with instant and cordial co-operation—for where is the man in this whole nation, from the humblest to the highest, who has an American heart within him, who would not cheerfully pay his part of the burden rather than bear his share of the dishonor? If you all think so—pledge me in this sentiment—

The plighted faith of the American States—Woe to any man or any party, who shall dare to dishonor it!

FIFTH SEMI-ANNUAL REPORT OF THE ENGINEER OF THE CENTRAL RAILROAD AND BANKING COMPANY OF GEORGIA, TO THE PRESIDENT, DIRECTORS, AND STOCKHOLDERS.

ENGINEER DEPARTMENT, CENTRAL RAILROAD,
Savannah, May 10th, 1840.

To W. W. Gordon, Esq. President:

SIR—The period has arrived, when it is expected, that according to the practice of this department, an account of its operations, and of the condition and progress of the work will be presented for the information of all persons interested in the enterprise. The transactions of the last half year do not afford any incidents calculated to give extraordinary interest to the present report; it will therefore be confined to a brief detail of the current operations, with such remarks as the circumstances seem to suggest.

Since the date of the 4th report, the contracts for grading have been extended to a point 142 miles from this city, and within six miles of the Oconee river; all contracts for grading that have been made during the last year, have been, with a provision for the payment of 75 per cent. of the consideration in the stock of the Company at its par value, and 25 per cent. in cash.

The last sections put under contract, embrace the heaviest work between Savannah and the Oconee river, the first mile from this city excepted. The contractors are responsible men, and are progressing satisfactorily with their work.

The total distance graded is 136 miles. The superstructure is laid for a distance of 109 miles, and is in progress with a force of upwards of 100 hands. The whole force now employed on the line amounts to a little over 300 hands.

Near the 100 mile station we commenced the use of the edge rail of the T pattern, as described in the third report; and find all our expectations of its advantages fully realized. The transition from the flat bar to the T rail at the pont of junction, is instantly perceived by all persons in the train as it passes over, and the smooth and easy motion of the cars, compared with the jarring uniformly attending the use of the flat bar, affords of itself, a sufficient consideration to induce the adoption of the edge rail, to say nothing of the great saving of the wear and tear of the machinery, and the advantage of being able, with the same power, to drag much heavier trains.

We have received nearly one half of the 2000 tons of this iron, ordered by the board during the last year, and expect to receive cargoes at short intervals until the whole order is accomplished. The iron received is of the best quality, and manufactured with the greatest care and exactness as respects conformity with the model.

We are much indebted to the attention of the house of Andrew Low & Co. of this city and of Liverpool, through which most of our iron has been ordered, for the superiority of the article.

The progress of laying our superstructure was impeded for a short period, and the use of the road for a short distance at its upper end suspended, by a freshet that occurred in the Ogechee river, in the month of March, which was almost unprecedented in its height, and the violence and rapidity of its approach: as our road skirts along the flats of the river for the distance of nearly eighty miles—frequently running into projecting bends of the swamp, it could hardly be expected that it would entirely escape injury from such a sudden rush of water; more especially when we consi-

der the extreme drought that has prevailed during almost the whole time of its construction, and the consequent want of compactness of many of the embankments. From these causss, a breach occurred near the 100 mile station, and about 1400 feet of an embankment averaging 5 feet in height, was partly swept off. This, of course, obliged us to suspend the use of that portion of the road until the damage could be repaired, which was effected in about ten days by the prompt and energetic exertions of Mr. Oliver, our contractor for superstructure. He immediately withdrew his large force from his regular work, and placed them at the repairs.

On making a settlement with Mr. Oliver, it was found that the cost of these repairs was less than one thousand dollars.

The embankment at this point, will be made much stronger than originally constructed, and protected by a revetment of rock on the river side. These, and some other preventive measures, will ensure a security against the recurrence of a similar injury. The damages occasioned by this freshet, to the remainder of the road below the 100 mile station, did not amount to one hundred dollars.

The cost of maintaining the road, as regards repairs and renewals, is a subject of much interest to all persons interested in its success. For the last half year, the expenses of this department have been about fifty dollars per mile, which would amount to ten thousand dollars per annum for 100 miles. Although this expenditure has been found sufficient to keep our road in good repair, during the last six months, we must of course look for an increase of the expenses on this head at a future day, as the superstructure grows older, but considering that some considerable part of the track has been laid upwards of three years, and that portions of the timber of the lower end of the road were unavoidably the "Loblolly Pine," the cost of repairs is certainly unusually light. That part of the repairs comprising the *preserving of the arrangements of the parts of the superstructure*—which on most wooden roads forms a very important item in the expenditure, is, with us a mere trifle. Our plan is such as in a great degree to preclude any liability of the parts to get out of adjustment; we have no wedges or keys, no nutches, knees or brackets on the ties, and after a string piece is once laid in its place, it is never again disturbed until it is almost entirely decayed, excepting in occasional places that have settled, to be raised by a lever and rammed—On ordinary wooden roads, the string pieces require renewal as soon as they exhibit symptoms of decay. With our plan they may be suffered to remain with perfect safety until they are almost entirely decayed, as the iron rail and ribbon are placed along the centre, and the string pieces being firmly bedded in the earth, will support the weight of the engine, until they absolutely crush under it. But if the flat bar were applied directly to the surface of the string piece, that surface would require to be kept always sound and solid—this is effected in our plan, by replacing the ribbon, which is done at a trifling expense.

A portion of the truss bridge over the Little Ogechee river (about 40 feet,) was destroyed by fire in December last, but was rebuilt without interrupting the passenger trains, and the freight trains only lost two days. It is impossible to determine whether this was the result of accident or design.

For the last half year we have run our trains at a speed somewhat reduced from the former rate—the time now occupied in accomplishing the 100 miles, is seven hours including about $1\frac{1}{2}$ hour stoppages, this is a running speed of 17 4-10 miles per hour. During the last year our rate was about 22 miles per hour: we find great benefit from this change; our

engines now run for weeks—even months with scarcely any repairs, while with their former speed, scarcely a trip passed, but some repairs were required by the engine or cars. I have no doubt this reduction of speed has reduced the item of cost of repairs at least one half.

The works at the Spring Hill Depot in this city, comprising the requisite buildings for the accommodation of the transportation and motive power departments, with the necessary machinery for the latter, have been steadily progressing in their construction, and we shall soon have our shops provided with all the conveniences for effecting any mechanical operations, required for the road.

In the department of motive power we are well furnished, in comparison with our equipment for the last season's business; we have now seven engines, viz:

The Tennessee	undergoing repairs	made by M. W. Baldwin, Philadelphia.
" Georgia	in good order	
" Macon	do.	
" Savannah	do.	
" Atlantic	do.	
" John Bolton	do.	Rogers, Ketchum & Grosvenor,—Paterson, N. J.
" Oglethorpe	do.	

The two last named are entirely new, and have been used very little, the others are all in excellent condition, and are capable of performing a maximum amount of service, with the exception of the Tennessee, which will be equal to a new engine when the repairs are completed.

We have five 8 wheel passenger cars—48 8 wheel freight cars capable of carrying 30 square bales of cotton each—8 four wheel burthen cars ordinarily used for baggage cars, and 9 lumber cars frequently used for cotton and other freight.

With this ample provision of motive power we apprehend no danger of being overrun with freight as we were for a time last fall.

In reference to the actual and prospective condition of the commerce and revenue of the road, it may be remarked, that although a great improvement has taken place in both respects within the last half year, and although it has produced a great augmentation in the receipts for that period, the road is still too far short of its completion to afford any thing like the proportionate profits that may reasonably be expected whenever it shall reach its destination. This increase, has of course been occasioned by the use of the railroad having been adopted throughout a more extended area of country, and as we shall have reachad a point in September next more than forty miles beyond the terminus of last fall, we may, from the greater extent of the road in use, and the enlarged region of country that will be accommodated, together with a more ample supply of motive power—confidently say that the prospects of the next business season are most encouraging to the stockholders.

Taking the successful progress of the South Carolina, and the Georgia railroads as affording in some degree a criterion by which we may measure our future prospects; we certainly find no occasion to be doubtful of our own success.

It may be seen by an examination of the reports of the South Carolina roads that their receipts for the half year ending May 1st 1833 were $18,982 92. This particular period of the operations of that road is selected for the analogy it appears to bear to the condition of ours for the last six months, as regards the state of advancement of the enterprise, distance completed, and other circumstances. They were then running 72 miles. Had

a motive power of 7 engines and 46 cars. We for the most part of the last half year have been running 80 miles with a motive power of only 5 engines and 12 to 15 cars, though our distance has lately been extended to 100 miles, and our motive power to 7 engines and 48 cars.

It will be seen by a reference to the table at the end of this report, that our receipts for the corresponding period, have been $69,183 96, nearly two hundred and fifty per cent. more than the South Carolina road under similar circumstances.

That road has however been going on increasing its earnings at an average rate of upwards of 21 per cent. per annum., and by their last report it appears that for the year 1839 the receipts were $422,841—and the sum total from the commencement of operations to the end of the last year is $1,758,435 58. I am informed that the business of the Georgia Road, also has, during the last six months been fully equal to the expectations of its friends.

A locating party under the direction of Mr. Holcomb is now employed in definitely fixing the line of the road from the Oconee to Macon, and I am happy to be able to give the most positive assurances that the cost of the road throughout will not exceed the estimate given one year since in my third report, and recent examinations lead me to hope that a considerable reduction will be made in that amount.

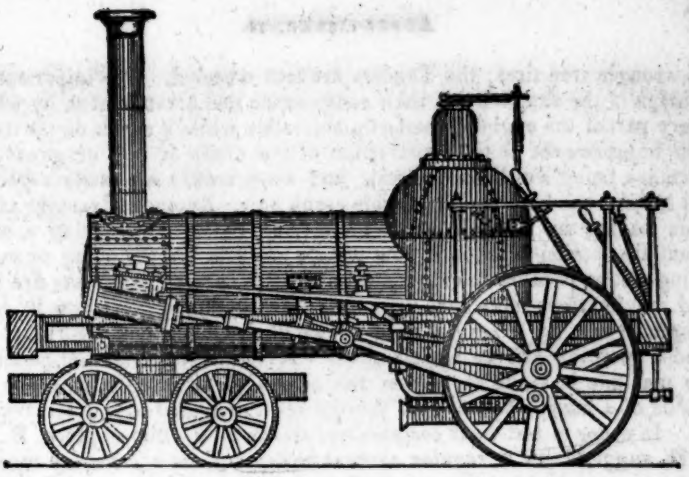
The state of forwardness of the grading of the Monroe road, the vigor and energy with which that work is prosecuted, and the very favorable route of the road from Forsyth to the Eastern terminus of the State road, give us ample assurance that a connection of these roads will soon be effected. It certainly appears to me to be the policy of this Company to press on with our work to a completion with all the means in their power, and I am happy to state that this is the determination of the Board of Directors so far as I am informed on the subject, and I doubt not with the means within their reach, they will be able to accomplish the completion of the enterprise, even though they should never receive one dollar by way of aid from the State.

Whenever this consumation is effected, the benefits of the system which are now unfolding themselves to various parts of the State, and have been particularly manifested to this city, will burst forth in their full effulgence upon the interests of all classes of the community, and the commercial prosperity of our State and our city, be placed on a basis beyond the reach of contingency.

I am sir, very respectfully,
Your ob'dt. serv't., L. O. Reynolds,
Chief Engineer.

Statement of Freight and Passage per Central Railroad of Georgia, for six months, ending 30th of April, 1840.

	Up Freight.	Down do.	No. of Passengers.		Total.
November,	$6746 46	$8324 68	1116	$3335 75	$18406 89
December,	3582 52	7436 79	1257	3520 00	14539 31
January,	2773 10	5774 13	1073	2968 25	11515 48
February,	3501 59	5566 24	1005	3058 69	12126 52
March,	2630 48	1586 31	964	2885 00	7101 79
April,	1740 80	1317 67	1010	2435 50	5495 97
	$20974 95	30005 82	6425	18203 19	69183 96



BALDWIN, VAIL AND HUFTY,

[LATE M. W. BALDWIN.]

LOCOMOTIVE STEAM ENGINE MANUFACTURERS'

BROAD, NEAR CALLOWHILL STREET, PHILADELPHIA,

Beg leave to inform the Railroad Companies in Europe and in the United States, that their establishment is the largest in this country, being able to employ 500 workmen, and that they therefore can fulfill the greatest commands. From this manufactory have been delivered, and are ready to be delivered, up to the present day, the following Engines:

	No. of Engines.			No. of Engines.
Columbia and Philadelphia Railroad,	Pa. 26	Charleston and Hamburg,	S. C.	6
Harrisburg and Lancaster,	" 6	Detroit and Ypsilanti,	Mich.	3
Philadelphia and Trenton Railroad,	" 4	Adrian and Toledo,	"	2
Philadelphia, Germantown & Norristown,	5	Detroit and Pontiac,	"	1
Little Schuylkill,	Pa. 2	Boston and Providence,	Mass.	3
Cumberland Valley,	" 1	Boston and Worcester,	"	3
Philadelphia and Reading,	" 2	Elkridge and Annapolis	Md.	2
Utica and Schenectady,	N. Y. 12	Clinton and Port Hudson,	La.	3
Rensselear and Saratoga,	" 2	West Feliciana Railroad,	"	2
Long Island,	" 2	New Orleans and Nashville,	"	1
Rochester and Batavia,	" 2	Madison and Indianapolis,	Ind.	3
Buffalo and Niagara Falls,	" 1	North Cross Road,	Ill.	2
Georgia Railroad and Banking Co.,	Ga. 12	Commercial Railroad,	Miss.	2
Central Railroad, Savannah,	" 4	Mississippi Railroad,	"	1
Monroe Railroad and Banking Co.,	" 2	Wimington and Raleigh,	N. C	2
New Jersey Railroad and Transportation Company,	New Jersey, 5	Lake Wimico and St. Josephs,	Fa.	2
Elizabethtown and Somerville,	" 2	Mobile and Cedar Point,	Ala.	1
Morris and Essex,	" 1	Tuscumbia and Decatur,	"	1
Philadelphia, Wilmington and Baltimore Railroad Co.,	Del. 4	Housatonic Railroad Company,	Conn.	2
		Island of Cuba Railroad,	West Indies,	2
				140

These Engines are of three different classes:

Class 1st.—Cylinder 12½ inches diameter; stroke, 16 inches; Driving wheels, 54 inches diameter; Weight with water and fuel, 26,000 lbs.; without water and fuel, 20,250 lbs.

Class 2d.—Cylinders, 12 inches diameter; Stroke, 16 inches; Driving wheels, 54 inches diameter; Weight with water and fuel, 23,000 lbs.; without water and fuel, 19,000 lbs.

Class 3d.—Cylinders 10½ inches diameter; Stroke, 16 inches; Driving wheels, 54 inches diameter; Weight with water and fuel, 20,000 lbs.; without water and fuel, 17,400 lbs.

These Engines are on six wheels, so arranged that one-half the weight is on the Driving wheels, which are placed behind the fire-box, the other half on a four wheeled truck, thus distributing the weight more equally than in any other construction. The wheels of the Engines have

all wrought iron tires; the Tenders are four wheeled. One important advantage is the simplicity of their construction and arrangement, by which every part of the engine is perfectly accessible while it stands on the track. The improvement in the construction of the crank is one of *great importance*, being less liable to break, and when broken are easily repaired, not costing one half that of a double crank axle. Another advantage arises from having the fire box before the driving shaft, thus making a more equal distribution of weight, that wholly corrects the galloping or undulating motion peculiar to engines with the driving shaft before the fire box, and making them more easy upon the road than any engines now in use weight, while, by a very simple device of throwing the weight of the tender upon the driving wheels of the engine or detaching it at pleasure, the machine is made to possess the advantage of a light, with the adhesion of a heavy engine, upon ascents when increased adhesion is required. In order to test their *comparative merits* with other engines, B., V. & H. suggests that a *regular account be kept of the expenses of repairs, distance travelled, work performed, and fuel used, by each engine*, for a year or more, which is the only way to get a correct data by which to judge of their respective merits. These engines are either crank axle or straight axle engines, but the manufacturers furnish the crank axled engine in preference, as they are much less liable to get out of order than the straight axled engines are, easier to themselves and to the road; and in case of accident by running off the track or being upset, the machine is protected by the frame. In fact, no instance is known where the wear (excluding accidents,) of the machines for one year has amounted to $300. In order, however, to avoid detention by accident, or wear and tear, the following duplicates should be ordered for each Engine:

1 pair Driving wheels, axle, and excentrics.
1 set of Tender wheels and axles.
1 set of Truck wheels and axles.
1 set of Brasses for working parts.
20 copper tubes.

They also furnish gratis, all the wrenches, tools, Jackscrews, hammers, etc., required for the general management of an engine.

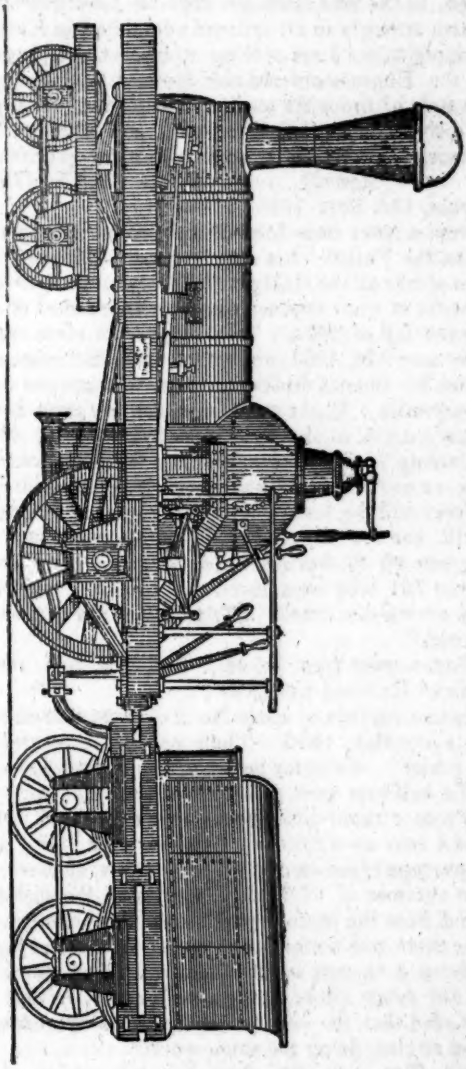
The assertions of the manufacturers are sustained, first by the great number of written evidences of officers connected with 38 different railroads in the United States, who agree in giving the manufacturers the credit of making a superior and satisfactory machine;

Second, by the result of the examinations of Chev. de Gerstner, constructor of the first railroads in Austria and Russia, who has now a better knowledge of railroads and railroad management, than any other person in the United States, gained by ten months of laborious and successful effort, to collect information which has never been before obtained by any other person in this country;

And lastly, by the most useful improvements in Locomotive Engines being guaranteed to them by letters Patent, which renders any person infringing amenable to the laws. Among their patented improvements, are the following:

1st. The Ground Joints for steam tubes.
2nd. The Pump Guide and Cross head.
3rd. The Stirrup for confining the pump chambers.
4th. The Metallic packing stuffing Boxes.
5th. The Cylindrical Pedestal Boxes for driving and truck wheels.
6th. The Globe Seats for boxes of truck and tender wheels.

7th. The Ferrules on the outside of copper tubes.
8th. The connecting the truck with the driving wheels to increase adhesion.
9th. The Plan of throwing the weight of tender upon the driving wheels.
10th The Crank Axle, which avoids the liability to break.



TESTIMONIALS.

Having visited within ten months nearly all railroads in the United States, and having collected the most useful information concerning them, which I intend to publish during my further stay of one or two years in

this country, I certify with pleasure that I received every where the best testimonials from the Presidents, Engineers and Superintendants of Railroads, in regard to the workmanship and the performances of Mr. Baldwin's Locomotives. Owing to the peculiar construction of these engines, I observe that they are remarkably easy to the road, even where light rails are used. I regard them, therefore, after a careful examination of the results obtained, as the best machines used on American Railroads, and recommend them strongly to all railroad companies in Europe. Should those companies apply to me I am willing to inspect the progress of the workmanship of the Engines ordered for Europe, and to report from time to time, on the state of the work to those companies. If they entrust me the bills of payment, I will keep them until the Engines are delivered on board the vessel, and save to the companies extra expenses.

(Signed) F. A. CHEV. GERSTNER.

Philadelphia, 13th Sept. 1839.

Extract from a letter from John Brandt, formerly superintendant of motive power on the Philadelphia and Columbia Railway, now superintendant of motive power on the Georgia Railroad under date of May, 1838:

"We have 24 of your engines on this road, several of which have been in use since the fall of 1834. Two of your 3d class engines commenced running February 22d, 1837, and travelled 55,695 miles up to the 1st May 1838, and cost for repairs during the above mentioned time one cent and eight mills per mile. Eight engines of the 1st class have travelled from the 1st January, 1838, to the 1st May, (four months) 49,469 miles, made 653 trips, drawing 16,836 cars. The cost for these four months I am unable to show, as our books are not posted, but can assure you that the expenses this year will be less than any former year. One of the 1st class, recently built, has drawn over the Columbia road, part of which has an ascending grade of 45 feet per mile, 35 loaded cars weighing 187 tons, equal to about 701 tons on a level, and travelled from 8 to 12 miles per hour, except on wooden track. This is the heaviest train that has ever passed the road."

Extract from a letter from James I. Shipman, Esq., resident engineer of the Long Island Railroad Company:

"We have two engines of class No. 3 of your manufacture, which have been in use since May, 1836. Their performance is worthy of the most unqualified praise. We carry as an ordinary load 15 freight cars, weighing five and a half tons each, and to show their efficiency we have frequently taken 20 cars without difficulty up an ascent of 35 feet to the mile, and have carried 4 *cars up a grade* 211 *feet per mile, for a distance of* 2,100 *feet.* The average speed for freight is 17 miles an hour, passengers 20 to 25. In the summer of 1837, they performed the distance of 162 miles each day, and, from the journal which now lies before me, that under this *severe usage* there was no failure in either of these engines for 6 months, which rendered a change in their usual time of running necessary, or occasioned any delay either in transportation of freight or passengers, I am fully satisfied that the cost for repairs does not exceed half that of a four wheeled engine, doing the same work."

John Cash, Esq., superintendant of motive power on the Norristown Railroad, writes:

"I take great pleasure in bearing testimony to the excellence of your engines. They are well adapted to *light or heavy* roads. With one of the small class, which has been in use nearly 3 years, I have drawn a train

of 750 passengers, over grades of 32 feet to the mile, at the rate of 14 miles per hour."

Wm. C. Young, Esq., Superintendant and Engineer of Utica and Schenectady Railroad, writes:

"The twelve locomotive engines procured of you for this road, have answered their purposes effectively. Notwithstanding much has been said about improvements in such machines, I am not able to satisfy myself that ours are wanting in any particular."

James Elliot, superintendant of motive power on the Philadelphia, Wilmington and Baltimore Railroad, writes:

"After an experience of several years with locomotive engines on different roads, I am of the opinion that the engines of M. W. B. are easier upon the road than any engines in use, and that they combine more advantages than any locomotive engines within my knowledge. They have been constantly running for the last 18 months; the engine Brandywine has been running 265 days, at a cost for repairs of $65 17, and has lost but five days since she was put on the road. The Christiana has been running 165 days, at a cost of $20 for repairs. Their average speed is 24 miles per hour, including stoppages."

L. G. Cannon, President, and L. R. Sargent, superintendent of the Rensselaer and Saratoga Railroad Company, says:

"We have two of your locomotives which have been in use about 3 years. They work well in every particular, and I deem it but an *act of justice* to say that the manufacture and materials of each, have proved to be of the highest order, and I have evidence from the official reports of other companies, and my own experience here, that your engines will, in performance and cost of repairs, bear comparison with any engines made in this or any other country."

W. W. Woolsey, Esq., President of Boston and Providence Railroad Company, writes:

"We have three of your engines, which have been in use since June, 1836; we never have had occasion to put them to their maximum capacity. They have carried seventeen freight cars, of gross weight eighty-five tons, engine and tender *not* included, over the road at an average speed of ten miles per hour, and this over an ascent of five miles in length, one half mile of which is forty two and a half feet per mile, the remaining four and a half miles thirty-seven and a half feet. They carry ten passengers and three baggage cars *very easily* over the road, at an average speed of eighteen to twenty miles an hour. Your engines give entire satisfaction."

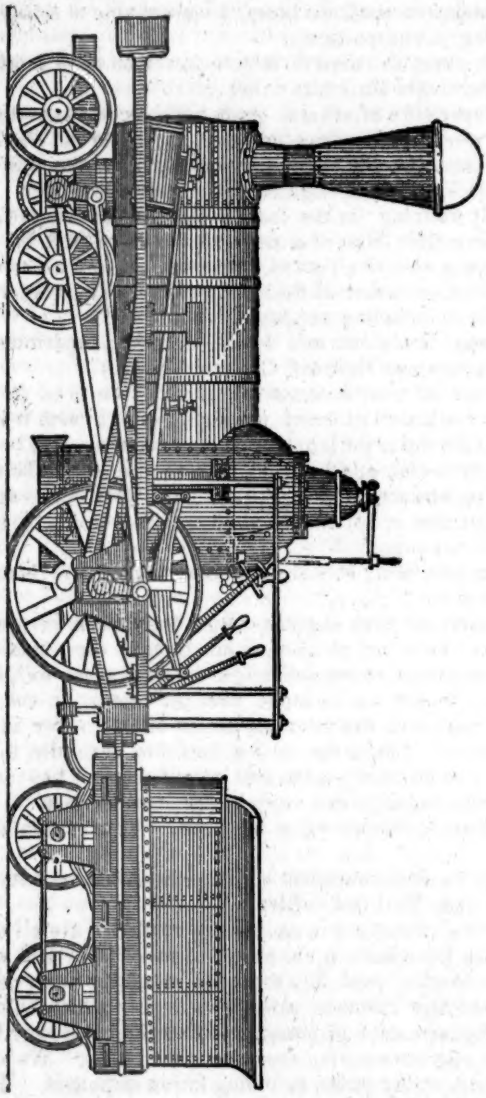
David Mathews, Superintendent of Engines and Machinery, on the Utica and Schenectady Railroad, writes:

"We have twelve engines in use on this road, and are all of your manufacture. They have been in use since August, 1836; and eight engines run about one hundred and fifty thousand miles per year, carrying about one hundred and fifty thousand passengers in cars which hold twenty-four passengers—eighteen cars of passengers and their baggage is considerep a load for your engines running twenty miles an hour. We are five hours crossing the road, eighty miles, including fifteen stoppages. Your engines have performed well."

J. Edgar Thompson, Esq., Chief Engineer and general agent of the Geogia Railroad Banking Company, writes:

"We have in operation on the Georgia Railroad, six locomotives from

Baldwin's factory, all of which have given us *entire satisfaction*. The simplicity of their construction, and the excellent proportions and arrangements of the various parts of machinery, entitle them, in my opinion, to a decided preference over any other engines that I have examined, either of European or domestic manufacture."



H. R. Campbell, Esq., Civil Engineer, writes:

"One of your third class engines, the West Chester, this morning, June 8th, drew a train of *fifty-one loaded* cars from Schuylkill Bridge to Broad

street, (4 miles,) passing several abrupt curves, some of seven hundred and fifty seven feet radius, and several ascending grades, one of which is 32 feet to the mile. The weight which I got from the weigh master of the road, to my own satisfaction, was 284 1-2 tons, exclusive of the engine It exceeds any experiment I have ever heard of in any part of the world, and was apparently made without any preparation, for no one was present to witness it but the hands on the road and myself, who was casually passing."

L. A. Sykes, Esq., Superintendant and Engineer of New Jersey Railroad, says:

"We have five of your engines, third class, on our road, which have been in use and have given entire satisfaction. Our first engine was put on the road in December, 1835, and has been in constant use with the exception of a very few days; is now in perfect order, and apparently as good as ever. In simplicity of construction, small liability to get out of order economy of repairs, and ease to the road, I fully believe Mr. Baldwin's, engines stand unrivalled. I consider the simplicity of the engine—the management of the working parts—and the *distribution of the weight*, far superior to any thing I have ever seen, either of English or American manufacture, and I have now no hesitation in saying that your engines will do the same amount of work with much less repairs either to the engine or the track, than any other engines in use."

A. G. Thorn, Engineer Clinton and Port Hudson Railroad, writes:

"Your engines have given *entire satisfaction* to all persons interested, in every respect. Combining speed, power, and superior workmanship. The first engine which we received, commenced working December 31, 1837. The *cost of repairs up to July* 16, 1838, *had not exceeded one dollar*."

S. Vail, Esq., Superintendant of Morris and Essex Railroad, writes:

"I am satisfied that in mechanical construction and proportions, simplicity, economy of repairs, and fuel, and on the amount of work which they will do, and the care to the road while running, the engines of Messrs. B., V. & H. are without a parallel in this country, or any that I have seen, which were manufactured in Europe."

Adam Hill, Esq, of New York, late Superintendent for the West Point Foundry Association, now at foot of Beach-street, New York, one of the first Engineers in this or any other country, writes:

"I have been acquainted with your engines (locomotives) since the first that you made, and I know from the experience that I have had of them, that they will do the most work, and cost less to keep them in repair, and are easier to the road than any other engines in use that I know of."

E. Harrison, Esq., Superintendent of Somerville and Elizabethtown Railroad, writes:

"We have two of your engines, one of which has been in use since 1st January, the other since February, running 60 miles per day, and thus far have operated remarkably well, and from our experience we do not believe that we could have done better at any other manufactory of engines in this country or in Europe."

W. Brown, Superintendent of motive power Vicksburg Railroad, says:

"The Mazeppa engine, one of your manufacture, has run 5,265 miles, and cost only $15 for repairs; included in that is a new tender spring."

John Naglee, President of Philadelphia and Trenton Railroad, writes 5th June, 1839:

"I consider your engines, when built with proper care in regard to selection of materials, equal to any built in the United States, and far preferable to any I have seen of English manufacture."

The Virginia, an Engine made by M. W. Baldwin, run between March 21, 1837, and January 1, 1838, 19,019 miles, and cost on an average 1 cent and 2 mills per mile, for repairs. Whole cost, $238 50.

The Paoli, another of Baldwin's engines, run during the same period, 18.043 miles, and cost for repairs on an average 1.6 cents per mile. Whole cost, $296 31.

The whole of Baldwin's engines run collectively 132,157 miles, and cost the State 2 cents and 3 mills per mile for repairs, including accidents.

It should be observed, that the road is a continuous succession of curves, some of which have a radius of 500 feet.

(Signed,) JOHN BRANT,
Superintendent on the Columbia and Philadelphia Railway.

The Superindendent of motive power on the Rochester and Batavia Rail Road writes:—"We have two of your engines of the smallest class which have been running 3 years. The grades on our road are as high as 45 feet, with curves on those grades of 1000 feet radius. Our cars weigh 3 tons, and we take from 20 to 25 loaded cars, and we make our trips of 32 miles in 2 hours including stoppages. I have had experience in managing locomotive engines for 5 years, and have no hesitation in giving your engines a decided preference before any that I have yet used or seen.

(Signed,) WM. HAYDEN,
Rochester, N. Y. July 3d, 1839. Superintendent of Motive power.

James Baggs, Superintendent of Motive Power on the Erie and Kalamazoo Railroad writes,

Sir,—I have been acquainted with your engines since the fall of 1835, part of which time I have had charge of them on different roads as Chief Engineer, and I feel free to say, that yours are the best engines in use, combining speed, power and superior workmanship, and will do the same amount of work with less repairs, either to the engine or the road, than any others that I have ever seen or used.

(Signed,) JAMES BAGGS,
June 27, 1839. Chief Engineer, Erie and Kalamazoo Railroad.

Benjamin Briscoe, Superintendent of Motive Power Central Railroad, Michigan.

Gentlemen,—We have three of your third class engines on this road, 2 of which have been running since January, 1838, and have given entire satisfaction; the third has run, since June last, sixty miles per day, and has not lost a trip for want of repairs. We have two engines manufactured by others, but we can only place confidence, while running, on yours, and I believe them superior to any manufactured in this country or in Europe.

(Signed,) B. BRISCOE,
Superintendent of Motive Power, Central Railroad, Michigan.
August 10, 1839.

John Lodge, Superintendent of Motive Power, Monroe Railroad Geo.

I have had several of your engines placed under my charge as master machinist upon our Railway, and I am pleased to say I have found them admirably adapted to our Railroad, and they are capable of doing a large amount of work at a small cost for repairs.

Monroe, Geo. July 16, 1839. (Signed,) JOHN LODGE.

From Benjamin Woodworth, superintendent of Motive Power on the Boston and Worcester Railroad, June 27th, 1839.

"In answer to your inquiries I will say, that on the Boston and Worcester Railroad are engines from 5 different manufactories, including yours, and in point of repairs, drawing a heavy load, and safety in running, we give yours the preference. I have lately returned from a tour to the principal Railroads between Boston and Washington, and find the performance of your engines to equal any now in use."

From Samuel Thomas, superintendent of Madison and Indianapolis Rail road, July 11th, 1839:

"Your engine has run regularly for 4 months, and has travelled 8,500 miles, and she has not cost one dollar for repairs, and its performance every way satisfactory and commendable."

From G. A. Nichols, superintendent of the Reading Railroad, July 31, 1839.

"We have one of your locomotives upon the Philadelphia and Reading Road, 2d class, which has been in use 15 months, and her performance is every way satisfactory. She drew, at one trial, 45 cars, loaded with 150 tons of nails and iron, making in all 221 tons gross behind the tender, from Reading to Norristown, 41 miles in 3 hours and 41 minutes running time, consuming 1.3 cords wood, and evaporating 996 gallons water. Your engine is more simple in her construction, more powerful, has done more work, is less liable to get out of order, and has thus far cost less for repairs than any of the engines since the road has been in operation."

From H. R. Campbell, civil engineer, July 31, 1839:

"In reference to your engines as to loads drawn in a single train, I can say that they are equal, if not superior, to any others, having reference to the weight of engine, and take them altogether, I will not hesitate to pronounce them the best engines used in the United States."

From annual report of the Tuscumbia and Decatur Railroad, Alabama:

The Triumph (Baldwin's Engine) is remarkable for the great simplicity of her gearing and at the same time for the strength of all her parts. She has been in active service since her arrival, and the cost of repairs charged to her to this date (6th mo.) is only $11 16."

From Edward Bissell, Esq. Commissioner of Erie and Kalamazoo Railroad, August 15th, 1839:

"We have two of your engines which have been in use three years.—Their performance has given entire satisfaction. The curves on our road [wooden track] are as low as 600 feet radius, and maximum grade 50 feet per mile. The Adrian has drawn over this grade 83 1-2 tons at the rate of ten miles per hour."

From Lewis Condit, President of the Morris and Essex Railroad, N. J.

"The maximum grade over our road is 134 feet to the mile, for about 1-5th of a mile, and at one point for 3 1-2 miles the grade is 80 to 85 per mile. Baldwin's engine ascends these grades with cars carrying 150 passengers, besides burthen cars with from 8 to 10 tons. Her maximum power has never been tested. Our rail is a wooden one with flat bars."

From Wm. Raymond Lee, General Superintendent of Boston and Providence railroad.

"I take this opportunity to say to you, that your engines have performed first rate service on our road, and fully answered the high reputation with which they came to us."

Gentlemen—I feel it my duty to make known to you, that the engine

Philadelphia on this road which I run, has, since the 2d day of June last travelled 10,000 miles without losing a trip, or five minutes; nor has it cost two dollars for repairs. At the same time she has drawn, daily, 12 tons up a grade of 500 feet to the mile with ease; said grade being at the wharf at Elizabethport, and at the starting point. She is now in good and complete order, and will run 10,000 miles more, with no more expense than the sum above mentioned.

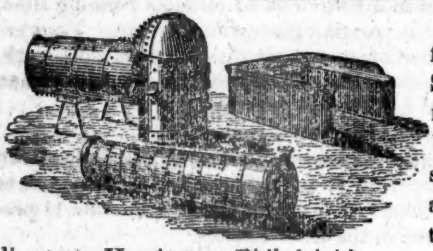
Yours, truly, JOSHUA MARTIN, *Engineer.*

Plainfield, N. J., October 1, 1839.

"Extract from the report of A. M'Haffy superintendent of motive power on the State road, Pa., 1837."

"The passenger engines of this construction (Baldwin's) have been running all season with scarcely any repair, and have rarely lost a trip; one instance, it is confidently believed, excels anything on record, of the performance of wood and iron. The engine "Paoli" has run one hundred and seventy-five successive trips, of 77 miles each, equal to 13,175 miles, without a dollar's worth of repairs."

MOSES STARR & SON,



MANUFACLURERS of Boilers for Steamboats, Locomotive and Stationary steam-engines, Tanks for Locomotive Tenders, Ship's Water Tanks, &c., have constantly on hand a variety of the above articles, at their manufactory Shackmaxon, above Franklin street, Kensington, Philadelphia. (y)

A CARD.

AN ESSAY ON THE LAWS OF TRADE *in reference to the works of Public Improvement in the United States;* by CHARLES ELLET, JR. Civil Engineer.

A very small edition of this work has been issued, and a few copies only will be offered to the public: these can now be obtained at the bookstores of

C. C. Little & Co. } Boston.
W. D. Ticknor, }
Wiley & Putnam, }
Appleton & Co., } New York.
G. & C. Carvill, & Co. }
Carey & Hart, } Philadelphia.
J. Dobson, }
J. Lucas, Jr., Baltimore.
F. Taylor, Washington, D. C.
R. D. Sanxay, Richmond, Va.
Wm. H. Berrett, Charleston, S. C.
Wm. T. Williams, Savannah, Ga.
A. Flash, Cincinnati, Ohio.
J. Maxwell, Jr., Louisville, Ky.
S. C. Dinnies & Co., St Louis, Mo.

NOVELTY IRON WORKS.

(*Situated near the Dry Dock, New York.*)

WARD, STILLMAN AND CO.

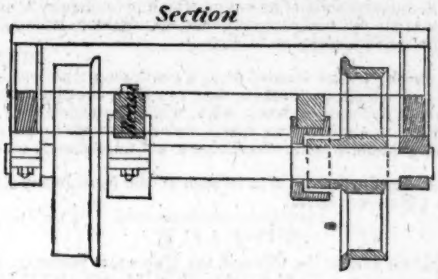
Iron Founders and Machinists; are prepared to execute orders for steam engines, sugar mills, saw mills, lathes, and other machinery of any required magnitude, in a superior manner.

STEAM BOILERS AND TANKS, Iron castings of every description, among which, they offer a superior quality of water pipes. Those interested will do well to call and examine for themselves. *** Orders left at the works, or at their office 242 *Water st.* will be promptly attended to. [12tf]

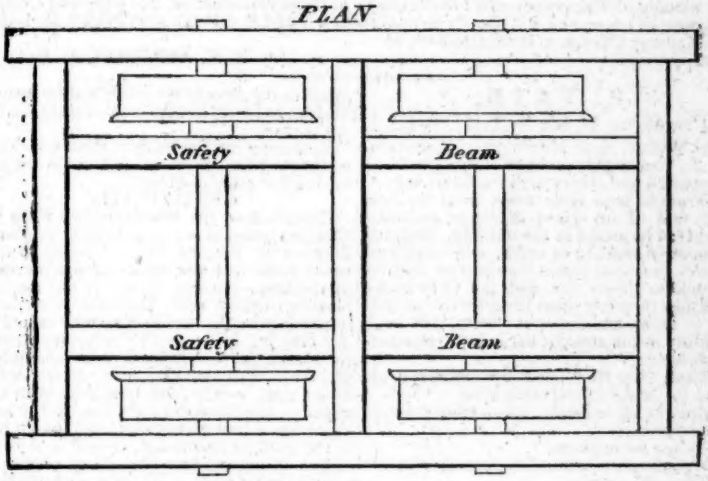
JUST PUBLISHED, and for sale at this office, *TABLE OF QUANTITIES for TRACING RAILROAD CURVES.* By EDWIN F. JOHNSON.

KITE' PATENT SAFETY BEAM.

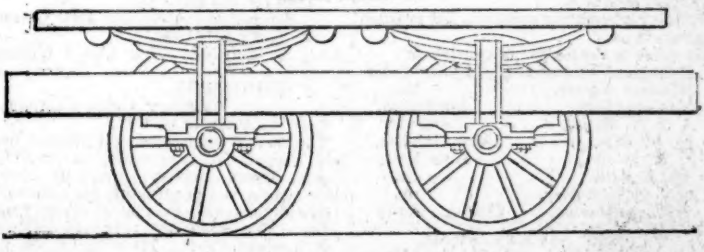
Section



PLAN



ELEVATION



MESSRS. EDITORS:—As your paper is devoted to the benefit of the public in general, I feel desirous to communicate to you for publication the following circumstance of no inconsiderable importance, which occurred some few days since on the Philadelphia, Wilmington, and Baltimore railroad.

On the passage of the evening train of cars from Philadelphia to this city, an axle of one of the large eight wheeled passenger cars was from some cause broken, but from the particular plan of the construction, the accident was entirely unknown to any of the passengers or, in fact, to the conductor himself, until the train (as was supposed from some circumstances attending the case,) had passed several miles in advance of the place where the accident occurred, whereas, had the car been constructed on the common plan, the same kind of accident would unavoidably have much injured it, perhaps thrown the whole train off the track, and seriously injured, if not killed many of the passengers.

I understand that this plan of constructing railroad cars, called (with truth) the safety beam principle, was invented by Joseph S. Kite, superintendent of the Philadelphia, Germantown, and Norristown railroad, who is certainly entitled to much credit for an inven-

tion which has and will yet (in the present extent of railroad travelling,) prevent many serious accidents and the loss of many lives, and in consideration of the above mentioned, and other practical demonstrations of its value, which upon inquiry I have since heard of, I cannot but think that all railroad companies should without hesitation immediately introduce and adopt the safety beam plan of cars.

PUBLIC SAFETY.

Since writing the above, I have learned from a gentleman who was in the train of cars that the car, the axle of which was broken, was run from the place where the break was discovered, to this city, a distance of eleven miles, without any detention, excepting that of changing the passengers to another car, which was deemed advisable only on account of the friction of the safety hubb, which commences to act immediately on the breaking of an axle.

A model of the above improvement is to be seen at the New Jersey Railroad and transportation office, No. 1 Hanover street.

NOTICE.

JUST Published, and for sale at the office of the RAILROAD JOURNAL, price $1,50 in morocco binding, and $1 in paper, a TABLE OF CUBICAL QUANTITIES, for computing the amount of Excavation and Embankment in the construction of Railways and Canals.

ALSO—In press, and will shortly be published, a TABLE OF QUANTITIES for laying out Railway Curves, with illustrations, by

9tf E. F. JOHNSON, C. E.

S. VAIL,

Proprietor of the SPEEDWELL

IRON WORKS, near Morristown, Morris Co. N. J., can supply at short notice, Railroad companies and others with the following:

Wrought iron tyres made from the best iron and of any *given diameter*, and warranted to be sound in the welding. Railroad companies wishing to order, will be pleased to give the exact inside diameter or circumference to which they wish the tyres made, and they may rely upon being served according to order, and also punctually, as a large quantity in the straight bar is kept constantly on hand.

Crank axles for Locomotive engines; made from the best Pennsylvania iron.

Straight axles for do. for outside connection engines.

Frames for engines.

Wrought iron work for steamboats; or shafting of any size.

Cotton screws of any length or size.

Railroad Jack-screws—a late invention, and highly approved.

Self-acting pumping apparatus for railroad water stations.

He refers to the following gentlemen:

Baldwin, Vail and Hufty,	*Philadelphia.*
William Norris,	*do.*
N. Campfield,	*Savannah.*
J. & S. Bones,	*Augusta.*
D. F. Guex,	*New Orleans.*
J. P. Allaire,	*New York.*
Adam Hall,	*do.*
Geo. W. Schuyler,	*do.*
William Parker,	*Boston.* Jan1y

PATENT SAFETY FUSE,

For igniting the Charge in Blasting Rocks, both in dry places and under water.

To those acquainted with and accustomed to using the Fuse, comment or description is unnecessary; to those who are not, we would simply observe, that it is an important invention to persons employed or concerned in Blasting, as by its use that hitherto dangerous operation is rendered as *safe* as the ordinary employments of the Farmer. It insures certainty, and effects an explosion as well under water as in the driest situation, adds much to the *force* of the blast, and by rendering the priming needle unnecessary, saves much time.

Numerous certificates from those who have tested the Fuse, might be given but the following is deemed sufficient.

CERTIFICATE.

Having seen the Patent Safety Fuse for Blasting tested to our satisfaction, we cheerfully certify, that we are convinced that it saves much time and labor—adds to the force of the blast—ensures certainty, and renders blasting perfectly safe. Besides, it is we think CHEAPER than the common straw Fuse. For dry blasting it is a great improvement; but for blasting in wet ground, it is invaluable. Messrs F. Hitchins & Co., contractors on the Erie Canal, certify that they have been engaged in the Cornish mines, England, where the Fuse is exclusively used, and that it has never to their knowledge, caused a miscarriage. They confirm our above expressed opinion of its value. We make no doubt that it will soon be in universal use in blasting operations.

DAVID HAMILTON,
Superintendent repairs, Erie Canal.
W. J. Mc ALPINE,
Assistant Engineer Erie Canal Enlargement.
J. HOUGHTON,
Engineer Cohoes Company.

Cohoes, December 16, 1837.

The Fuse is manufactured by Baron, Bickford, Eales & Co., at Simsbury, Hartford Co., Conn., orders directed to them, or either of their agents, will be promptly attended to.

Agents for selling the Patent Safety Fuse.

David Watkinson & Co., Hartford, Conn.

A. G. Hazard & Co., 135 Front-st., N. Y.

Erastus Corning & Co., 361 South Market-street, Albany, N. Y.

E F. & A. G. Smith, 29 Exchange-street, Rochester, N. Y.

H. Kingman & Co., Buffalo, N. Y.

Curtis & Hand, 16 Commerce-street, Philadelphia, Penn.

Pratt & Keith, South Charles-street, Baltimore, Md.

G. R. Peake, Richmond, Va.

W. B. Peake, Fredericksburgh, Va.

[Jan 1 tf]